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OCTOBER, 1922.

MIND

A QUARTERLY REVIEW

OF

PSYCHOLOGY AND PHILOSOPHY.

EDITED BY

G. E. MOORE,

WITH THE CO-OPERATION OF PROFESSOR PRINGLE-PATTISON, PROFESSOR C. D. BROAD, AND F. C. BARTLETT, M.A.

CONTENTS.

PAGE

I.—Prof. Alexander's Theory of Sense Perception: G. F. STOUT	385
II.—Is the Conception of the Unconscious of Value in Psychology? (Symposium): G. C. FIELD, F. AVELING and J. LAIRD	413
III.—Are History and Science different Kinds of Knowledge? (Symposium): R. G. COLLINGWOOD, A. E. TAYLOR and F. C. S. SCHILLER	443
IV.—Symbolism as a Metaphysical Principle: W. TEMPLE, Bishop of Manchester	467
V.—Discussions:	
Physics and Perception: B. RUSSELL	478
Rejoinder: C. A. STRONG	486
Some Remarks on Relativity: R. AINSCOUGH	489
VI.—Critical Notices:	
W. E. Johnson: <i>Logic, Part II.</i> : C. D. BROAD	496
E. Meyerson: <i>De l'Explication dans les Sciences</i> : L. RUSSELL	510
VII.—New Books	518
VIII.—Philosophical Periodicals	530
IX.—Note	536

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MIND

A QUARTERLY REVIEW
OF
PSYCHOLOGY AND PHILOSOPHYI.—PROF. ALEXANDER'S THEORY OF SENSE
PERCEPTION.^{1, 2}

BY G. F. STOUT.

THE PROBLEM.

THERE is a system of things and events which exist, endure, change and interact independently of the conditions which make them perceptible to us through sense experience. This we may call the physical world. It contains our own bodies and also things external to our bodies which we may call external objects. In agreement with Mr. Alexander and also with common sense and science, I take the existence of the physical world for granted. We are concerned only with the question how we know it in sense perception.

Ordinary sense perception includes much knowledge which is due to previous perceptions, as when we say that we hear a footstep on the stair or a horse trotting. But there is also in all sense perception a factor that cannot be accounted for in this way. There is a modification of the content of sense experience which occurs independently of any reinstatement from the past. This factor is present alike in normal perception and in dreams, hallucinations and illusions. When a drunkard seems to see pink rats, he is really aware of an actual sense-apparition such as would be normally experienced if there were really pink rats before his eyes.

¹ Contributed to the Joint Session of the Mind Association and Aristotelian Society at Manchester, July 14th-16th, 1922.

² Throughout this paper I have criticised Mr. Alexander's theory of knowledge in an unsparing way. I feel bound, therefore, to say once for all, that I immensely admire the ability and thoroughness with which he has attempted to maintain what I regard as a quite untenable doctrine. No one, I think, could have performed better the task which he has undertaken; and we owe him a great debt of gratitude for putting us in an advantageous position for judging a view which must be either accepted or rejected before further advance can be made.

These contents of immediate sense experience must not be confused with our knowing about them. We recognise and distinguish them; we attend to them, like or dislike them, desire their presence or absence. But they are not themselves recognitions or distinctions, likings or dislikings or desires.

They are or may be objects for a subject but are not themselves subjective. We have not a right to regard them as mental in any sense in which what is mental is contrasted with what is material. In agreement with Alexander, I should myself maintain that in the antithesis of matter and mind they fall on the side of matter and not of mind.

I use the term *sensum* rather than sensation because "sensation" almost inevitably suggests something distinctively mental, and may lead to confusion between knowing and experiencing on the one hand, and what we know or experience on the other. It is, in fact, open to the same objection as Berkeley's use of the word "idea" which gave rise to the gravest misunderstanding of his real meaning. Instead of sensation the term "sense-datum" has been employed by recent writers. But this also is a question-begging word. It suggests that what we originally know in sense perception is merely the sense apparition as immediately experienced to the exclusion of anything beyond it. This assumption seems to be a mere superstition, which would make knowledge of the physical world impossible. I, therefore, prefer the term "*sensum*" which is also used by Mr. Alexander. I prefer it because it does not prejudge the view that though knowledge is limited by immediate experience it is not even originally limited to immediate experience.

It is here that my disagreement with Mr. Alexander begins. He seems to hold that sense perception is primarily confined to *sensa*. His peculiar theory of sense knowledge is an attempt to show how on this assumption, we can, none the less, know by way of sense a world of physical things and events.

MR. ALEXANDER'S GENERAL THEORY.

According to Alexander, all knowledge is the direct revelation to the knowing mind of something which exists independently of being known. This is a position which I myself accept. I disagree only with his application of it to *sensa* and images. Here we are concerned especially with *sensa*. He asserts and I deny that *sensa* are identical with perceived features of physical existence.

A convenient way of approaching the question is by considering the connexion of *sensa* with those processes in the percipient's body without which they are not experienced.

It is, I take it, generally admitted that there is no variation in the sensa without corresponding variations in the bodily conditions, and no variation in relevant bodily conditions without corresponding variations in the sensa. Factors external to the body make no difference to the sensum, unless and so far as they affect the sense organ, and processes in the sense organ make no difference unless and so far as they affect the nervous system.

Facts of this sort naturally point to the view that sensa have no existence apart from the percipient's organism, and that what occurs outside the nervous system makes no difference to them, except in so far as it makes a difference to this. The sensum can no more be identical with all or any of the external factors concerned in the production of the physiological process than this process itself can be identical with its external conditions.

This is the natural view suggested *prima facie* by the facts. But Mr. Alexander thinks that the facts can be otherwise construed, and he holds that they must be otherwise construed if we are to give any tenable account of our knowledge of the physical world. His own theory may be called the penny-in-the-slot theory. According to him, when we perceive objects as external to our sense organs the sensum is itself a feature of the external object, having an existence and nature of its own, quite independent of its entrance into our sense experience, whereby it becomes a sensum. The physical and physiological conditions of perception simply serve to unveil it. They put a penny in the slot and so, as it were, remove a screen which would otherwise have hidden it from the percipient.

In looking at a sheet of white paper, I experience a sensum having a certain shape and colour quality. Alexander holds that under normal conditions, this very shape and quality, as I immediately experience them, pre-existed in the paper before I saw it, and continue to exist when I cease to see it. They exist in the paper whether anyone sees it or not, and might have so existed if there had been no eyes or brains in the world. The passage of reflected light from the paper to the eye and the ensuing processes in the retina and brain determine only the appearing of the sense apparition. They in no way determine the existence or nature of that which is thus revealed. In this example there is a continuous train of processes constituting what may be called a bridge between the perceived physical existence at one end and at the other the neural occurrences which are more directly connected with the relevant sense experience. Further, the bridging series of events is causally initiated from the side of

the thing perceived and not from the side of the subject. What occurs to the percipient's brain is only a terminal effect. But this is not what happens in ideal revivals, dreams, illusions and hallucinations. When for instance, we look at a grey speck on a red ground and, owing to contrast, experience a green sensum instead of a grey one, what is revealed as a sensum is some particular green existing in a place and at a time other than the place and time of the grey speck. The green depends on the reflexion of light from the surface of some independently existing thing. But the reflected light is not propagated to the eyes of the percipient. How then is the connexion established when the green is sensibly revealed to him? Mr. Alexander answers that the process which unveils the sensum may be initiated in two ways. In veridical perception, it is initiated from the side of the perceived object. In dreams, illusions, hallucinations and also in ideal revival, it is initiated from the side of the subject. There is simply an inversion of what is otherwise, in all relevant respects, the same train of events.¹

Mr. Alexander does not anywhere attempt to deny that sense apparitions come and go and vary in strict correspondence with events happening in the sense organs and nervous system just as if, not only their appearance, but their nature and existence were inseparable from such bodily conditions. From this point of view, therefore, all that he can be logically justified in asserting is that his own revelation theory is a possible alternative which may also be made to fit the facts. Instead of proceeding in this way, he presses his own dictum upon us as that which we must accept to the exclusion of any other. Before proceeding to detailed criticism, it will be useful to consider the motives which have led him to take up a position so uncompromising.

THE MOTIVES WHICH UNDERLIE HIS THEORY.

He certainly does not prefer his own theory on the ground that it is simpler. On the contrary, he frankly admits that it is much more complicated and difficult. "I cannot," he says, "help confessing how much simpler it would be, and how much laborious explanation it would save, if only it were true that our intuitions and sensations were mental, as is commonly supposed, and how easy it is compared with our procedure to refer" their "variations in part to the mind or its body".² His reason for refusing to follow this easy road is that it leads to destruction. "We should be living

¹ I shall try to show at the close of this paper that there is no such initiation from the side of the subject.

² *Space, Time, and Deity*, vol. ii., p. 199.

in a world of sensations which would be hallucinations . . . ; some would be veridical and some not. But we could only discriminate the veridical ones by means of sensation, that is, by other hallucinations. For it is of no use to urge that our appearances are partly determined by the thing and partly by our bodies. How shall we know what part is due to things except through observation, for which, in turn, we are dependent in part upon our bodies? We are reduced to a world of consistent hallucination."¹ In this passage Alexander treats as equivalent two entirely distinct propositions: (1) that *sensa* and images are mental, and (2) that they are directly correlated in their existence and nature with occurrences in the body of the percipient. I admit and maintain that if they were not material but mental we could not know anything about a material world. We should not even have the thought of such a world so as to be able to raise the question whether it exists or not. If, through sense perception, we are to know about the moon as it exists independently of our sensitive organism, the *sensum* which we have in seeing it must be continuous in existence with it, and therefore fundamentally homogeneous with it in its general nature. The contents of sense experience and physical facts must belong to the same order of being and be contained within the unity of the same continuous whole. Just as, within the sense experience of each individual, his several *sensa* are variable modifications of one presentation continuum, so the several presentation continua of each of us are all continued into and are of a piece with a wider continuum which comprehends and connects them—comprehends and connects them as the physical universe comprehends and connects your body and mine. It will be said that even if, in fact, *sensa* are thus prolonged into an existence beyond themselves, yet, since this existence is not immediately experienced, we can never come to know that it exists or of what nature it is. It is of vital importance to note at the outset that this supposed difficulty arises from the assumption that in sense knowledge all that we know primarily and immediately is what from time to time we immediately experience as a *sensum*. On this basis it is cogently argued that if we start merely with these immediate *sensa*, there is no assignable way of passing beyond them. Hence, if they are not themselves features of the physical world existing apart from the conditions under which they appear to us, it is impossible that we should ever come to know, or even have any thought of physical objects at all.

¹ *Space, Time, and Deity*, vol. ii., p. 199.

As Dr. Hutcheson Stirling puts it: "How can the scratch know of the thorn?" Granting the initial assumption, this reasoning seems incontrovertible. But if we concede the initial assumption, I do not see how Alexander's theory of perception can remove the resulting difficulty. Whether *sensa* are or are not features of the world existing apart from our sense organs and nervous system, they form at any rate only a vanishingly small fragment of this world as known to common sense in its spatial and temporal immensity, and its microscopic complexity. If this tiny bit is all that is primarily known how are we to pass from it to a knowledge of the rest? Further, even the given fragment lacks the internal coherence of the material world. *Sensa*, considered merely as they occur within individual experience, have no systematic order according to general rules, such as makes possible our daily lives. Berkeley, Mill, and Mr. Russell, in order to obtain such an order, have to posit, besides actual *sensa*, a vast system of possibilities of sensation, conceived as existing, persisting, changing, and mutually determining each other as if they were not mere possibilities but actual existences. But if we start purely and merely from *sensa* as they are actually sensed, and images as they are actually imaged, we cannot even reach such a system of possibilities: and if we could, we should not be able to define what the system is without presupposing a system of actual existences other than the *sensa* themselves, on which it depends—including our own bodies and the things around us, near and remote. If we grant to Mr. Alexander that *sensa* are merely disclosures within our experience of independently existing features of the physical world, and that therefore they cannot be hallucinations, yet if these *sensa* are all that we know, they cannot for us constitute a world.

But does Mr. Alexander really assume that our knowledge is primarily confined to the contents of immediate experience? The answer is that sometimes he does and sometimes he does not. The term "experience" is loose and ambiguous; and Mr. Alexander seems to pass from one meaning of it to another without noting the difference. Sometimes, the word is used for all knowledge as dependent on experience, as having its source in experience, as limited and conditioned by the limitations and conditions of experience. Sometimes it is used for the experience itself in which knowledge has its source, and by which it is conditioned and therefore limited. A dentist's knowledge that his patient is feeling toothache doubtless has its *source* in experience in the narrower sense of the word. What is thus known may

therefore be said to come within the range of his experience—in the wider sense. But, in the narrower sense, he certainly does not experience his patient's toothache. He can experience only his own toothache. He can know about his patient's pain; but he cannot, as Mr. Russell would say, be immediately acquainted with it. To avoid the ambiguity, I am in the habit of calling experience in the narrower sense, *immediate* experience. But Mr. Alexander does not attempt to avoid the ambiguity. It continually brings grist to his mill and alone makes his theory of knowledge seem plausible.

This fundamental confusion is found even in his general account of primary sense perception. Primarily, according to him, what is experienced is the *sensum*, and the *sensum* is a feature of the physical world existing quite independently of the conditions under which we experience it—existing before and continuing to exist after its appearance to us. But besides this he always assumes, tacitly or explicitly, not only that this independent existence is a fact, but that the fact is immediately known in sense-knowledge. I grant that if it is to be known at all, it must be immediately known.¹ But it does not follow that what is immediately known must be immediately experienced. How can we immediately experience the fact that something existed before it was immediately experienced and will exist after it has ceased to be so, and that its existence is independent of its occurrence as a sense apparition? How can such facts be immediately experienced as the *sensum* itself is? If knowledge of this sort is to be called experience, it can be so only in the wider and looser application of the word. It is, of course, open to Mr. Alexander to say that what I have called the wider and looser application is the only one that is important, and that the distinction between what we immediately experience and what we know *through* experience makes no difference to his account of the way in which we know the external world. But if he proceeds on this principle, he ought to do so consistently. He has no right to ignore a distinction in working out his own views, and also to use this very distinction as a weapon against those who disagree with him. Yet this is precisely what he does, as may be shown by a further quotation from the passage to which I have already referred. After dismissing other alternatives which might remain open, if his own theory of perception is rejected, he proceeds as follows: "Or we may suppose that thought informs us of a

¹ Immediate knowledge is here contrasted with *inference*. There is a fundamental sense in which all knowledge, including what is inferential, is immediate.

world of things to which our appearances are a guide. But I do not know how that thought could have experience of its object or what sort of an object it could be; and indeed the real world would remain in this way an unknown."¹ Now, when Mr. Alexander speaks in this way, he is using the word "experience" in the narrower application as meaning immediate experience to the exclusion of any thought of what is not immediately experienced. His position is that what is not thus experienced cannot be known at all. But this distinction is, for him, only a stick to beat a dog with. In working out his own theories, he ignores it or denies it. For him, the experience which is identical with knowledge of a sensum, includes the knowledge of that sensum as existing independently of its appearance to us. But it is only the apparition as such which can be immediately experienced, not its existence independent of its appearance. Similarly, he takes for granted not only that we can experience the same thing at different moments, but that we recognise it as being the same at the different moments. Again, he would say that our knowledge of other minds is experience. But he can hardly say that when I know that some one else has feelings and sensations his feelings are literally identical with my feelings and that his sensing of sensa is literally identical with my sensing of sensa. When, therefore, in the passage quoted, he says, "I do not know how that thought which informs us of a world of things could have experience of its object, or what sort of an object it would be," the reply is obvious. In the wider meaning of "experience," which Alexander himself freely uses, and cannot help using, experience includes thought, which is not experience in the narrower sense. From this point of view, the thought itself *is* experience of the object, and the thought itself immediately reveals "what sort of an object" it is.

MY OWN POSITION.

I have now attempted to state, in general, and also to criticise, in general, Mr. Alexander's account of sense perception. I have yet to consider, in detail, the way in which he attempts to reconcile his fundamental doctrine that the sensum is simply identical with an independent physical existence, with the fact, which he like others is bound to recognise, that sensa vary in manifold ways without corresponding variations in what we take ourselves to see or feel

¹ *Space, Time, and Deity*, vol. ii., p. 200.

when we experience them. But before entering on this topic, it will conduce to clearness if I give a very brief sketch of my own view of the way in which we know the material world.

First let me say that it seems to me the most arbitrary dogmatism for any one to attempt to determine *a priori* what is and what is not capable of being known. If we consider the concept of knowledge in general, apart from the special circumstances of this or that individual knower, there is no reason why it should not be coextensive with all being. There is nothing to confine it to this or that part of the universe, or to anything short of the whole in its unity and in its detail. That things are known is as much an inexplicable fact as that they exist. To ask how anything can be known is like asking how anything can exist. Both are wonderful facts, but it is no use wondering at them. We must take them as we find them. When, therefore, we turn to consider finite individuals, we must assume that their knowledge is limited, not because it is knowledge, but because they are finite. The problem is not—'How can I know anything?' but rather 'How is it that I do not know everything?' What is to be accounted for is not knowledge but ignorance and error and beliefs that may or may not be true.

It is clear that at least one fundamental reason of the limitation of knowledge in finite individuals is the limitation of their immediate experience, owing to its dependence on what takes place in their finite bodies. But, as I have already insisted, if we assume that what we know is not only limited by immediate experience but primarily confined to immediate experience, we cut off all possibility of knowing anything beyond this. Setting aside this alternative, what are we to substitute for it? We may find a clue by taking into account the omnipresent fact that, in a very important sense, knowledge is *not* limited. It is not possible to fix on this or that partial feature or aspect of the universe and assert that we know this *only*, without, in knowing it, also knowing something beyond it and connected with it in some sort of unity. We cannot, so to speak, draw a chalk line circumscribing what we know and dividing it absolutely from what we do not know. The special items which we regard as known to us always come before us in questionable shape. They are or may be apprehended as essentially incomplete, and so raise questions concerning what is required to complete them. And a question always includes some notion of the general nature of its answer. In wanting to know something, we must know, however indefinitely, what it is that we want to know. Thus, what we call ignorance is really

diluted knowledge. We know what we are ignorant of as being unknown and as connected with what we know. There is no reason why this principle should not hold for the first beginning of our knowledge of the material world as well as for its subsequent stages; and I therefore assume that in primary sense knowledge more is immediately known than is immediately experienced. More precisely, I proceed on the assumption that the whole complex content of our sense experience and each of its several discernible parts are primarily apprehended as continued into a whole which transcends and includes them.¹ The unity of the whole is apprehended as a continuation of the unity of that fragment of it which is immediately experienced. Hence what is not experienced, inasmuch as it is immediately known as being of a piece with what is experienced, must be from the outset apprehended as homogeneous with it in those general respects without which the continuous connexion cannot be thought. These will include those fundamental features on which the unity and continuity of our own presentation-continuum depends—extension, temporal succession and change, degree of intensity, and, in general, what Mr. Alexander would call categorial characters.

For each individual the material world has two parts, though it is only in critical reflexion that he comes explicitly to distinguish them. There is, on the one hand, his own *sensa*, and, on the other, what we may call the physical existence which is not immediately experienced by him though he has immediate knowledge of it in knowing his own sense apparitions. The unity of his own presentation-continuum means for him a corresponding unity in the physical world. In knowing distinctions and relations between his own *sensa*, in knowing their changes and variations, he knows corresponding distinctions and relations in the domain of physical existence.

- D This may seem a large assumption. But, of itself, it will not take us far. It leaves us still on the threshold of our problem. Taken by itself it would make the realm of physical existence, as far as we are concerned, merely an idle duplicate of the content of sense experience. In order to account for our knowledge of external objects, we have still to answer two questions: (1) How is it that variations are constantly occurring in the content of sense experience

¹ What Dr. Ward calls the 'projection of the self' seems to me to be equally primary and inseparable from this projection of the presentation continuum. But for the purpose of this paper I may neglect this aspect of the question.

which do not imply corresponding variations in the external objects which we take ourselves to see or touch or otherwise perceive by our senses? (2) How is it that when these variations are left out of count as irrelevant, we can, none the less, independently of them, determine definitely and positively the nature of the external object? How, for instance, can we determine the extent of the thing seen though we cannot identify this with any one of the variable extents of the sense presentations which we have in seeing or touching it?

The answer to the first question is found in the distinction and relation between the body of the percipient and its environment. We apprehend our own bodies in apprehending a certain complex of *sensa* which we may call the body-complex. This complex is persistently and continuously presented while other *sensa* come and go. It consists, in part, of *sensa* which are the same in kind and continuous in existence with those that we experience in perceiving other physical existences and their local and temporal distinctions and relations. Thus, at this moment, the visual presentation which I have in looking at my hand, forms part of the continuous field of visual experience which also includes the visual presentation of a table. The same holds for touch when I touch successively or simultaneously my hand and the table. But the body complex also includes *sensa* peculiar to itself which enable each of us to apprehend his own body in a way in which we do not apprehend other things. These are (a) organic *sensa* such as hunger, thirst, and what are distinctively called *bodily* pains and pleasures; (b) motor *sensa*, which scientific enquiry has found to be conditioned by the variable states of muscles, joints and tendons, due to the variable position and motion of the limbs and sense organs. The first point to be noted is that the experiences in which we apprehend the body as visible and tangible normally accompany motor experiences and vary regularly as these vary. The second is that motor *sensa* are in regular ways under subjective control. Apart from the experience of resisted effort, we can initiate, continue, discontinue or change them at will, or, at will, retain them unchanged. This holds good independently of variable circumstances. I can wave my hand whether I am on the top of Vesuvius or in my lecture room. Now this subjective control of motor *sensa* also involves a corresponding control of the connected visual and tactual *sensa*. This, however, is not so unconditional. It depends on an *appropriate* adjustment of the organs of sight and touch. I cannot see my moving

hand unless my eyes are turned in the right direction. In this respect the perception of our body and its movements is conditioned like the perception of objects external to the body. With this reservation, we may say that control of our bodily changes as these are known by way of motor sensibility is also control over the same changes as known by sight and touch.

I now take a step of vital importance. Other *sensa* besides those which belong to the body-complex are also under subjective control. Their occurrence and cessation, their continuance and their variations are constantly conditioned by perceived movements and positions of the body which we can command at will. This control, as compared with that which we have over our own free movements, is partial, limited and conditional. But, within its limits, it is of a regular and systematic character. It is limited, inasmuch as we cannot by any motion of our body or sense organs determine *what* specific sense experiences we shall have. We can only determine their occurrence, persistence, and cessation, and cause them to change in various regular ways, when they are already present. Whenever I open my eyes I have certain visual presentations, and these regularly disappear when I close them. But the opening of my eyes does not, of itself, determine *what* special presentations I shall have, or how they shall be grouped. In stretching out my hand I get cutaneous sensations, but whether these shall be such as arise in contact with the air, with a table, or with water does not depend on me. In approaching or retiring from a visible object the visual *sensum* which we have in perceiving this object increases and diminishes in magnitude in a regular way. But which special magnitude it shall have at any given distance is otherwise determined. As a final example, take the experience of resisted effort. The degree and character of effort put forth is variable at will, but the degree and kind of resistance met with is not. There is thus revealed, in endlessly manifold complex and subtle ways, the antithesis between sense experience as dependent on the motion and position of the body, and as dependent on things external to the body. Change and difference so far as conditioned by our bodily position are not, and are not taken to be, change and difference in the external object perceived. This is my answer to the first question.

The second question arises out of this answer to the first. What is the real nature of the external object, if we cannot identify it with the real nature of the sense presentations which we have in perceiving it? Its character is apprehended

as quite independent of the bodily conditions of perceiving it; but the sensa we have in perceiving it perpetually vary as these conditions vary. How then can we determine positively and definitely the size and shape of physical objects outside our body, in distinction from the size and shape of the relevant visual and tactual sensa? We determine the independent nature of objects external to the sense organs, not directly by their relation to our sense experience but by certain relations which they have to each other, relations of such a kind that they *do not vary with the bodily conditions of perception*.

In order to illustrate the general principle, it will be sufficient to refer only to causal relations and to relations of extensive magnitude. If I turn on the tap in my bath-room, water flows and the bath begins to fill. Inasmuch as the flow of the water is apprehended as causally conditioned, in the given situation, by the turning of the tap, it is a process which takes place independently of the bodily conditions of perceiving it. Even if I leave the bath-room altogether I assume, that, because the tap is turned on, the water is still flowing as it would if I were present. The characters of external objects are determined for us, in part, by the differences they make to such independent causal processes. If we look down from a high cliff on men on the beach below us, the visual apparitions of the men beneath us are extremely small as compared with those of men standing beside us. A child might be led to believe that the men themselves are proportionally diminutive. But from the causal point of view this would mean that if he were near enough, he could pick one of them up and put him in his pocket. Similarly, if an oar were really bent in the water, this would be awkward for rowers.

The extensive magnitude of external objects is in part determined by their causal relations. But there is also a more direct way of fixing it, measurement by superposition. In the first instance, the measurement is by superposition of the members of the percipient's own body on each other and on external things.

This relation of superposition does not itself fall within immediate sense experience. When my hand is in contact with the table, there are not two layers of tactual sensa which cover each other. The relation is between two physical existences considered as existing independently of the bodily conditions of perception and the coming and going and other variations of the sense impressions which are connected with these bodily conditions. So far and so long as

the palm of my left hand is in contact with the table I cannot, by any motor adjustment, see either the surface of the table or the palm of my hand. I cannot touch either of them with the other hand, and I can neither see nor touch anything between them. It is thus that the relation of superposition is revealed as independent of the vicissitudes of my sense experience and its bodily conditions. It would be so revealed, even if my hand were insentient, if, for example, it were made of wood. Nothing depends on the peculiar nature of touch sensations. They are important only because, normally, when we have them our skin is in contact with a surface external to it. Hence they are for us signs of superposition. It is on this condition that the advantage of touch over sight depends. Otherwise the delicacy of tactual discrimination of size and shape is far inferior to that of sight. It is not the superior precision of any form of sense experience which leads ultimately to the minute exactness of scientific measurement. It is rather such relations as superposition which do not vary with the varying conditions of sense experience.

Such means of assigning positive values to the characters of external objects, after discounting the conditions of perception, just because they are founded on the relations of external objects to each other, can yield only knowledge of *relative* size, shape and position. Hence the modern doctrine of relativity is only a complex development of the relativity involved from the outset in primitive stages of perceptual knowledge. From the same point of view, we can account for the distinction of primary and secondary qualities. Secondary qualities are those which are not thus determinable by the relations of external objects to each other. Hence, though we may know them as existing independently of the variations of our sense experience, we cannot, or can only, in a very inadequate way, fix what they are apart from these variations.

THE PRECISE POINT AT ISSUE.

From this account of my own position, it is clear wherein this differs from that of Mr. Alexander. We agree in holding that all knowledge is an immediate revelation of what exists. But he maintains and I deny that this immediate knowledge is primarily confined to what is immediately experienced. This question I have already dealt with. But there is another arising out of his position which requires further discussion. If we start, as he

seems to suppose, by knowing only what we immediately experience, how can we pass from immediately experienced sensa to external objects? According to Mr. Alexander the question itself rests on a mistake. It rests on the assumption that the sensum is an existence distinct from the external object perceived in experiencing it. Alexander on the contrary cuts the knot by assuming that when we perceive something external to the body or sense organs the sensum is simply identical with some feature either of the thing perceived or of some other thing which we have previously perceived or which at any rate exists or has existed in the external world. I have already pointed out that even if we grant the identity as fact, this does not explain how the identity comes to be known. This, however, is a difficulty which does not seem to trouble Mr. Alexander. But there is another which does trouble him, so that he feels bound to meet it by an elaborate explanation. He spends all his ingenuity in attempting to answer the question how, if the sensum is always identical with some feature of external existence, it is possible for the sensum to vary without corresponding variations in the external object which we perceive or take ourselves to perceive.

He uses the term "appearances" for sensa considered from this point of view. His general position is that so far as appearances differ from what we take ourselves to perceive this is because in them what really exists in the external world is either only partially revealed or revealed in a distorted way.

REAL APPEARANCES.

Setting distortions aside for the moment, let us consider first the fragmentary nature of the sense revelation. How is this fragmentariness made to account for difference between the sensum and the feature of the external object which is supposed to be identical with it? At first sight it would seem that there can be no road this way. For if the partial feature which is revealed is simply identical with the given sensum, it is hard to understand how in spite of this identity it may yet differ from the sensum, merely because there are other partial features which are not revealed. It would seem that to account for this there must be distortion as well as deficiency. In fact, as we shall see, Mr. Alexander does everywhere introduce distortion, without recognising that he is doing so. Appearances supposed to be partial but not distorted are called by Alexander real

appearances. A simple example is the change in the brightness of a light, or the loudness of a sound, as we approach the source or recede from it. According to Alexander "the mind situated further off selects a portion of the thing". Part of this is identical with the sensum, other parts are not. This would seem a simple and straightforward explanation, if we could attach a satisfactory meaning to the phrase "part of the brightness". But according to Alexander himself there are no such parts. As he immediately goes on to say, the "selection of the lower brightness from the real brightness does not mean that that real brightness is divisible into parts, as if intensities could be obtained by addition". This being so, I, at any rate, see no way of avoiding the conclusion that, inasmuch as there are no parts to select from, no parts can be selected. Each degree of brightness as immediately experienced is a distinct degree, occupying its own place in the intensive scale. To say that the real brightness contains the others is merely a very inaccurate way of saying that it is more intense or, at any rate, not less intense than any of them. It is therefore not surprising that side by side with this, Mr. Alexander gives another and quite different explanation of what it is that is selected from the total object. This is now said to be not part of the intensive quality, but part of the external stimulus which conditions the apprehension of it. On this view, "the distance from a sound selects that amplitude of the qualitative vibration which represents the diminished intensity produced by distance". The difficulty here is that no such selection takes place, and also that if it did it would not be what is required. Selection, in the only relevant sense, means that part of the external object is a sensum and part not. But in seeing brightness or hearing sounds the light and sound vibrations are not presented as sensa either wholly or fractionally; and even if they were they would not be identical with the brightness or the sound. They would not be so either in fact or according to Mr. Alexander. For, according to him, a sensible quality is something new which emerges when certain motions occur. It is not identical with the motions themselves. Thus the alleged selection from the amplitude of the vibration merely means that the occurrence and nature of the sensum depends not directly on the vibration as it initially proceeds from the external object, but on the way in which the previous state of the sense organ and nervous system is modified by that phase of the vibration which reaches the ear. Wherever the vibration comes from and however it may originally be set going, the sound sensum is determined by that phase of it in

which it arrives at the sense organ and contributes to determine changes in this and in connected neural arrangements. In other words the occurrence and nature of the sensum depends directly only on what takes place in the body of the percipient, however this may be occasioned. But this is just what Alexander is concerned to deny.

Let us, however, suppose that, in some relevant sense, part of an intensity may be revealed in sense experience and part not. Such partial presentation will not cover the facts unless it is taken also to involve distortion.

What is revealed as a sensum, so far as it is thus revealed, is itself a distinct and separate intensity, not part of an intensity. The part in being cut off from the whole to which it is supposed to belong, becomes itself a distinct intensive whole, a distinct degree of intensity occupying its own place in the intensive scale. Thus a less intensive magnitude is substituted for the intensive magnitude of the external and distinct sound or brightness. This is distortion. But Mr. Alexander cannot admit distortion in what he calls "real appearances". The real appearances are the basis and presupposition of all others and they are called real just because they are assumed not to be distorted by bodily or mental conditions.

So far I have been considering only whether Mr. Alexander's theory is tenable, when examined from the point of view of our present knowledge of the external world and of the conditions of perceiving it. But there is a further question which, though it is altogether of vital importance to his general position, is completely ignored by him. Let us grant that the several degrees of brightness which we immediately experience in approaching a source of light form an ascending scale which has its upper limit in the brightness of the external object and that this brightness exists quite independently of our sense experience and its bodily conditions. Let us grant that this holds good in such a way that, at least metaphorically, we may legitimately speak of the several degrees of brightness as parts of the external brightness. Conceding all this, we have still to inquire whether it is included in the primary sense knowledge of the percipient. Is the knowledge a constituent condition of the first apprehension of the external object as such? If Mr. Alexander had faced this question, he would, I submit, have found himself caught between the horns of a very serious dilemma. If he says "yes" then he must frankly and consistently surrender the assumption that we can primarily know only what we immediately experience as we

experience a present sensum. What thus enters experience is only a part of the external intensity. If it not only *is* a part, but is apprehended as being a part, there is the knowledge of an intensive whole, which includes it, and this whole, *ex hypothesi*, is not itself a sensum, and has never been a sensum, or if it has it cannot be known to have been a sensum. I should say that the intensive whole, if it is primarily known, is known by a thought which has its source in the essential incompleteness of immediate experience. In the strict use of language, I prefer to say that it is known *by* experience rather than that it is itself experienced. Mr. Alexander, on the contrary, may insist if he likes in calling thought, as such, a kind of experience. The question concerns only the employment of words, and does not touch the real issue. The essential point is that on any view the bare immediacy of sense is transcended, and so transcended as to yield knowledge of what Hume called matter of fact in distinction from relation of ideas. More is immediately known than is immediately experienced.

On the other hand, if it is said that the partial intensities are not primarily apprehended as partial, Mr. Alexander seems to be impaled on another horn of the dilemma. How do the parts of the whole external intensity come to be apprehended as being parts of it? Or, what comes to the same thing, how is the existence of the whole external intensity known at all? It must be remembered that for Mr. Alexander the apprehension of real appearances is the basis of all further knowledge of the external world. It is here, therefore, if anywhere, that we must look for the answer to our question. But he fails to supply any answer, and none can be given consistent with the assumption that we primarily know only what we immediately experience. He is thus, after all his pains and ingenuity, faced with what is, in principle, the old insoluble problem. If we begin by knowing only our own *sensa*, how can we ever get beyond them? The difficulty is not met and is hardly mitigated by saying that the *sensa* are in fact identical with partial features of the external object.

Real appearances vary not only in intensity but in size and shape. When we move away from a plate at right angles to its centre, the relevant visual sensum retains its shape, but diminishes in size as the retinal surface excited becomes smaller. Yet the size of the external object as determined by measurement and the part it plays in causal process remains constant. If the plate is seen obliquely the shrinking is greater for one axis than another and its sensible shape varies in consequence. The sensum is elliptical in-

stead of circular. According to Mr. Alexander, "the distance of the eye from the plate acts selectively as with the varying degrees of brightness; the size which we see is a portion of the real geometrical size of the plate".¹ Here he tacitly assumes that what we see is identical with the visual sensum which we have in seeing. This is contrary to the ordinary use of language, and gives rise to great confusion. What we take ourselves to see is not merely the size of the visual sensum but the size of the external object as suggested under the given conditions by the visual sensum. As I approach or retire from the plate there are certain limits of distance within which I do not ordinarily notice the difference between the successive visual experiences so as to compare them. I have learned to regard them as due merely to bodily conditions of perception and therefore as irrelevant. Hence I see the plate as of the same constant size and shape in spite of them. Beyond these limits of distance I become aware of the sensible variations as such, and then they perceptually suggest corresponding, though not proportionate, variations in the external size and shape. So far as this happens, I still take myself to see the size and shape of the external objects. The only difference is that I may recognise that I see them inaccurately. Mr. Alexander, in identifying the sensation with what is seen, shares the fundamental fallacy of Berkeley that we properly and primarily perceive only what we immediately experience.

External size and shape is of course the same whether we are conversant with it by way of sight or by way of touch, so far as the perception is not mistaken. But this does not imply that the extensive tactual sensum is ever identical with the extension of visual sensa. This identity is asserted by Mr. Alexander; but he does not even attempt to meet the cogent argument against it in Berkeley's *Theory of Vision*. He merely appeals to a simple experiment. "We have only to hold the plate in our hands and move it away . . . in order to assure ourselves that the touch and the colour of the plate are in the same place." Now I agree that this experience yields evidence of the identity of extension as seen, and extension as touched. But it does not in the least show that visual and tactual sensa are included within the same continuous extension. What is really relevant and important is that the extent of the plate as measured by superposition of the hand remains constant, while the visual sensa vary. The constancy of tactual sensa as compared

¹ *Space, Time, and Deity*, vol. ii., p. 194.

with visual is not a superiority but a defect. It is to be noted that they are not constant except for the same part of the skin; and even with this restriction the constancy is only due to the fact that the conditions under which the tactual experience is gained are strictly fixed and limited instead of being widely variable as they are for sight. But this is merely a defect to be added to the other imperfections of touch as compared with vision. The tactual sensum is constant only in the way in which any one of the alternative visual presentations is constant so long as the eyes are turned in the same direction, and the thing seen is at the same distance. The difference is that tactual experience is limited to one set of conditions and does not occur at all without them.

It follows from what I have just said that neither the real nor the apparent shape of the external object is identical with the size or shape of the visual apparition immediately experienced. The real shape and size of the external object is determinable by measurement and causal relations. Its apparent size and shape is what we, rightly or wrongly, estimate the real size and shape to be as suggested by present sense experience in conjunction with preacquired knowledge. This being so, there is no *a priori* reason for accepting Mr. Alexander's position that the size of the sensum and the external size differ only as part and whole, the extent of the sensum being only a portion of the extent of the thing seen. We have now to consider whether this hypothesis fits the facts better or worse than the alternative view that the sensum depends directly and ultimately only on the way in which the sense organ is affected.

Extensive magnitude unlike intensive does contain distinct parts and we may therefore speak quite literally of some parts being revealed in sense experience while others are unrevealed. But this is not an accurate description of what we observe when a visual presentation shrinks as the distance from the thing seen increases. It is not correct to say that some parts vanish while others persist. Each discernible part shrinks as well as the whole and the whole shrinks only because the parts shrink. Details do disappear but only because they gradually become too small to be distinguishable, until at the last we are left with a blur in which none of the original details can be discerned. This does not fit in well with Mr. Alexander's theory. But it is just what we should expect if the visual magnitude is correlated with retinal and nervous process and is dependent on other factors only if and so far as they condition this.

Even if, setting aside this difficulty, we suppose that

what happens is that some parts are taken and others left, this is not enough. It does not explain how or why the selected parts close with each other and run together in one continuous immediately experienced extension, instead of having distances or gaps between them, corresponding to the parts selected. This involves more than mere selection. It is also distortion of the kind which Mr. Alexander would class as illusion. Parts which are immediately contiguous in sense experience are separated by intervals in the external object. In Mr. Alexander's language, they are seen in situations which do not really belong to them. We thus again reach the result that the *real appearance* in which the external object is supposed to be simply identical with the sensum is, in fact, infected through and through with illusive distortion. But the basis of Mr. Alexander's theory is that real appearance is free from illusion. It is indeed for that reason that he calls it real. There is also the further difficulty that the distortion as distinguished from mere selection requires a separate special explanation on another principle. I do not doubt that Mr. Alexander's ingenuity could devise one. But it is the extreme of perversity to put forward two radically distinct hypotheses, both of a very complicated nature, when the facts themselves carry one simple, obvious and adequate explanation, so to speak, written on their face. The size and shape of the sensum varies directly with the retinal excitation whatever factor may be concerned in producing this.

Before leaving the subject of real appearance, I may note that the same epistemological difficulty confronts Mr. Alexander for extensive as for intensive variations. Does the percipient subject himself know in primary sense knowledge that there is a total extension containing all the parts revealed to him as *sensa*? Does he primarily apprehend the parts as parts of this whole? If he does, then primary sense knowledge transcends immediate experience. On the other hand if parts are not apprehended as parts, how can we ever come to know that there is a whole which transcends and includes them?

MERE APPEARANCES.

According to Alexander the distinctive character of the appearances which he calls real is that though they are selected from the whole nature of the thing perceived they are not otherwise altered. Besides this he recognises two other kinds of appearances which are not merely

selected but distorted. The word "distorted" means that instead of the external object which we take ourselves to perceive, something else is substituted more or less different from it. Strictly following out his general philosophy of perception, Mr. Alexander maintains that what is thus substituted does not at all owe its nature and existence to any process occurring in the body of the percipient; on the contrary it is always some feature or other in the external world, existing quite independently of the occurrence of sensations and their bodily conditions. There is distortion only inasmuch as this independent existence is sensuously revealed in connexion with a thing to which it does not belong: and this means that it is revealed in a place where it really is not or at a time when it really is not. Such misleading revelations are traced to different sources. They may be due to the mind of the percipient, which includes for Alexander the bodily conditions of perception. When this occurs the appearances are called illusory. On the other hand the distortion may be due merely to the combination of the thing perceived with other things which are also themselves perceived or at least capable of being so. The sense-appearance is then called a mere appearance. It is with mere appearances that we are at present concerned.

At the outset, I find it impossible to obtain from Mr. Alexander any consistent and intelligible account of what a mere appearance is. On two points, indeed, he is clear. The mere appearance is not identical with any feature of the external object to which it is referred by the percipient, when this is considered in detachment from its environment. The partially immersed stick, when considered by itself, apart from its immersion, is not bent as it seems to be. In the second place, the mere appearance is in some way identical with a feature of the total situation composed of the special object perceived and other objects combined with this. It is when we inquire how this can be that the puzzle begins. I find in Mr. Alexander two distinct accounts of what takes place; and neither of them seems tenable. Both are given side by side in the following passage. In mere appearance, "we do not sense the thing of which we apprehend the mere appearance taken by itself, but in connexion with some other thing which modifies it".¹ Let me here interrupt the quotation to say that this is the first alternative. What is relevant in the *sensum* is, on this view, really a feature of the particular external object perceived, as this object is really

¹ *Space, Time, and Deity*, vol. ii., p. 191.

modified by something else. In the rest of the quotation Mr. Alexander drops this view and passes, without being aware of the discrepancy, to a quite different position. "What we sense or otherwise apprehend is not the thing by itself, but a new thing of which the thing forms a part; and there is no reason to suppose, illusion barred, the compound thing does not really possess what we sense." Here the sensum is identified, not with a feature of the perceived thing as this is modified by its environing conditions, but with a feature of a compound object conditioned by the combination of the thing perceived with other things.

Both these explanations break down hopelessly: and Mr. Alexander is only able to conceal the inadequacy of each of them by oscillating between it and the other. Take first the modification theory. If the perceived object is really modified by the conditions under which it exists, this means that it really has a character which would not characterise it if these were absent. It is this character which is revealed in the mere appearance. What is revealed as a sensum does in fact belong to that external object which we take ourselves to perceive. It is plain that if this were so, there would be no distinction between a mere appearance and a real appearance. As a matter of fact, what Mr. Alexander calls mere appearances are not constituted in this way. The water does not really bend the stick in which it is plunged. What is modified in both instances is the light in its passage to the eye, and the retinal excitation, and the visual presentation dependent on this. We are no better off if we try the other alternative, that what is revealed as a sensum is a character of a composite external object containing, as a part of itself, the particular thing which we perceive. It is not true that the bend in the visual presentation when we see a partially immersed oar, is identical with a bend of the whole physical complex constituted by the water and the oar. There is no such bend; what is true is that this complex of external conditions gives rise to refraction of the light proceeding to the eye, and thereby determines the retinal process in such a way that the visual sensum is really bent. Similarly when we see a distant mountain through a haze, it is not true that the colour-quality which we immediately experience is really spread over the surface both of the haze and mountain. In what way then can it be said to belong to both of them together if it belongs to neither of them separately? To say that it belongs to both together is only a very inaccurate way of stating the obvious fact. The light reflected from the mountain is so altered by its passage through the haze as to

affect the eye as it would not otherwise do and so gives rise to different visual presentations.

We have yet to consider a third formula used by Mr. Alexander, which is inconsistent with either of the others. The sensum is supposed to be identical with some feature of an object existing in the environment of the percipient: but owing to other conditions also existing in the environment, what is thus revealed as a sensum is revealed in a place in which it is not really present. How far this explanation is supposed to cover mere appearances in general, I am not sure. It is applied by Mr. Alexander especially to one mere appearance, reflexion in a plain mirror, assumed to be flawless. Let us suppose that what is reflected is the body of a man facing the glass. Then, according to Mr. Alexander, the shape, size and colouring of the man is really where the man is, some distance in front of the mirror. But for one who sees the reflexion this identical shape, size and colour is immediately experienced in a place where it is not, *i.e.*, some distance behind the surface of the glass.

This theory, if it is taken strictly, I hold to be quite impossible. But it is important that it should be taken strictly, and not confused with another position which no one, I presume, would dispute. Undoubtedly when we see a man reflected in a mirror, his shape and size, and consequently the man himself appear, *i.e.*, *seem* to be where they really are not, or seem as if they were where they really are not. If the percipient does not otherwise know the contrary, he will believe that there is a man behind the mirror. A baby, for instance, may feel for the man whom he takes to be in front of him. To the baby it seems that there is a man there. To us it only seems as if there were a man there.

Up to this point the word "appears" has been used as a synonym of "seems". I have not spoken of appearing absolutely, but only of something appearing or *seeming to be* this or that, or appearing as if it were this or that. But the word appearing has also another and a radically different meaning. It may be used absolutely. Now if and so far as anything really appears in this sense it really is as it appears. If the man himself really appears behind the mirror he really is behind the mirror. The apparition is the reality itself appearing. There is no question of seeming. Whoever may deny this, Mr. Alexander cannot consistently do so. For his whole philosophy of perception is based on the assumption that what is revealed in immediate sense experience exists as a feature of the external world. This presupposes that at least it really exists.

The relevant visual sensum which we have on looking at the reflexion of a man in a mirror does really appear and not merely seem to be in a certain place with a certain situation relatively to other places. This is possible inasmuch as it is a locally distinct part of the total field of visual sensa experienced at the time. It is a sense apparition revealed within a more extensive apparition which is itself revealed in the same way. Within this continuous whole it is immediately experienced in certain local relations to other sensa, e.g., those which we have in seeing the frame of the mirror or articles on our dressing table. An appeal to immediate experience yields unambiguous evidence that it does really appear and does therefore exist in these relations and does not merely seem to be in them. Unfortunately for Mr. Alexander, this appeal to immediate experience makes nonsense of his whole doctrine of sense knowledge. It makes nonsense of his fundamental doctrine that sensa are identical with characters of the external object. For the form and colour of the man whose reflexion we see is not really placed relatively to the frame of the looking glass, as the corresponding visual apparitions are really placed in relation to each other. If the form and colour of the man are identical with the form and colour immediately experienced, when his reflexion is seen, then the form and colour of the man must really exist, and not merely appear to exist, in two separate places at the same time. This is most clearly shown by a fact which evidently puzzles Mr. Alexander, as it ought to do. "If" he says, "you touch a thing like a pencil which is in front of you so that you see it directly and also in the mirror, the judgment is troubled. For the virtual image is only seen with the help of the mirror, and the real pencil is seen as well as touched; and there are thus two visions of space at once."¹ On my view this means that though we see the same single external object, there really are three distinct sensa, two visual and one tactual. But if, like Alexander, we identify the single external object with the several sensa we are in a desperate position. The visual apparitions are really distinct within the field of visual experience, and separated from each other by an experienced interval. Immediate experience reveals their local separation just as it reveals their shape and colour. I have as little right to deny that there are two of them as to deny that they exist at all. It is just because there are two visual sensa that it seems as if there were two external objects—two hands.

¹ *Space, Time, and Deity*, vol. ii., p. 198.

It is strongly, vividly and insistently suggested that there are two hands, only because in ordinary vision there are usually two external objects where two visual presentations are distinguished. It is futile to urge that the same sensum is twice apprehended and on this account seems itself to be doubled. For there is no way of distinguishing the awareness of one sensum from that of the other except by distinguishing the *sensa* themselves.

ILLUSORY APPEARANCES.

Illusory and mere appearances are, for Mr. Alexander, essentially akin inasmuch as in both of them a sensum appears in connexion with an external object to which it does not really belong. But there is a difference in the conditions under which this takes place. In mere appearance the displacement is due to factors external to the body of the percipient. An illusion, on the contrary, is due to what occurs within the sensitive organism. Both in illusion and mere appearance, what is sensibly revealed disagrees with what really exists only so far as a sensum is misplaced in space or time. The sensum itself which is thus misplaced is supposed to be identical with something which really exists in the external world at some place or time. In mere appearance, it is supposed to be somehow contained in the total situation which confronts the percipient. In illusion it may be anywhere.

I have already examined the conception of something as appearing in a place in which it is not. The same difficulty which I have noted in dealing with the mirror, arises here also. "There is," says Alexander, "no illusion until an element in the appearance which does not belong to the thing is perceived as belonging to it: until, for instance, the green seen by contrast on a piece of grey paper lying on a red ground is seen as an affection of the place of the grey paper. The green by itself is not illusory, but the patch, occupied by the grey, seen as green." (II., p. 209.) I would here first inquire what ground we have for asserting the existence of the green sensum. The only answer and the sufficient answer is that the green is actually revealed within immediate sense experience. But on the same principle we are also bound to assert that the green sensum does not merely seem to be actually placed within the red. For what is immediately experienced is a green situated within a red field and continuous with it. This green therefore does not merely seem, but actually is, within the red.

But, according to Alexander, the red as sensed is identical with the red colour of the paper, and the colour of the paper is where the paper is and nowhere else. If this were true it would inevitably follow that the green is really situated within the red surface of the paper and continuous with it. But, *ex hypothesi*, what occupies this particular place within the red background of the paper is, in fact, not a green but a grey speck. The only conclusion that I find myself able to draw is that Mr. Alexander is wrong in identifying sensa with features of external objects existing independently of sensation and its bodily conditions. The existence and nature of sensa are inseparable from correlated processes in the nervous system and sense organs. The characters of things external to the body are unaffected by these processes.

In conclusion, I must insist on an objection which, if it is well founded, is fatal to Mr. Alexander's account, not only of illusory perception, but of ideal revival in general. It is fundamental to his whole theory that when the mind knows an external object it shall communicate with *this* through a specially appropriate transaction in which both are equally partners. In ordinary sense perception there is a continuous train of occurrences causally initiated by the object and terminating in a process taking place in the brain of the percipient. There ought to be an analogous bridge in ideal revivals and in illusion between the independently existing object and the cognitive subject. According to Mr. Alexander there is such a bridge here also. The only difference is that whereas in normal perception the common transaction is initiated from the side of the object, in illusion or ideal revival it is initiated from the side of the subject. In ordinary perception, the bridge is thrown across the stream from one bank; in ideal revival and illusory perception it is thrown across the stream from the opposite bank. It must be admitted that this formula is very neat. My difficulty is that it seems to ride rough-shod over the relevant facts. The formula could be justified only on the false assumption that for example, when, owing to contrast, we have a green sensum instead of a grey, there is initially a certain process in the brain and organ of vision, which sets going a light vibration or some equivalent train of occurrences terminating in something which is really green and not grey. Otherwise the interval between the percipient and the independently existing object is not bridged as it is in veridical perception. If it is said that no bridge is required and that a certain cerebral event by itself suffices to unveil a certain sensum in whatever place and time this may exist, I would ask you to

consider the hopeless jigsaw puzzle which, on this view, would confront us from our infancy. Then, sense experience would indeed reveal characters and qualities in the world external to the body, but would supply no clue to determine where and when they existed. It may be said that originally the process which discloses a certain sensum must be initiated from the side of the object, but that when communication has once been opened, the nervous occurrence will suffice by itself however it may arise. But the explanation does not really meet the difficulty. It is as if it were maintained that having previously crossed a stream by a bridge we can therefore cross it after the bridge has been swept away, provided only that a fragment of it remains on our side of the stream.

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II.—IS THE CONCEPTION OF THE UNCONSCIOUS OF VALUE IN PSYCHOLOGY?¹

A SYMPOSIUM BY G. C. FIELD, F. AVELING AND JOHN LAIRD.

I. BY G. C. FIELD.

It is one of the chief claims put forward by the exponents of the so-called 'new' Psychology that they have been the first to recognise seriously the importance of the Unconscious, and the necessity of assuming unconscious mind or unconscious mental processes to explain the mental occurrences that do take place. I propose here to ask whether this line of thought is really of value in Psychology. I do not intend to discuss whether it may or may not have a certain value as a provisional working hypothesis within certain limited fields, say, the applied science of Psycho-therapy. The title confines us to a consideration of its value to Psychology, in the proper sense. Does it help us to understand more clearly what sort of thing the mind is, or what sort of thing the concrete human being is? Does it afford us a real explanation, an explanation that gives us real knowledge, of the mental processes of this human being? To these questions I find myself compelled to return a decisively negative answer, well aware that by doing so I shall at once write myself down as a hopeless obscurantist in the minds of many people. But I will try to give reasons within the limited space at my disposal, why I am unable to discover any value in the hypothesis and why I maintain further that, as it is used by some modern writers, it leads us to a positively erroneous idea of the nature of the mind and of certain mental processes.

My first difficulty is one with which we are all familiar. I repeat it here, without making the slightest claim to originality in it, because I cannot find that the exponents of the 'new' Psychology have so far shown the slightest sign of realising its seriousness or even its meaning.

We are told again and again that it is necessary to assume the existence of the Unconscious, of unconscious regions of the mind or of unconscious mental processes. But before we

¹ Contributed to the Joint Session of the Mind Association and the Aristotelian Society at Manchester, July 14th-16th, 1922.

can do that, and still more before we can put forward this assumption as a real explanation of anything, we must at least have an intelligible idea of what sort of thing this is which we have got to assume. And it is here that the difficulties begin. The point has often been put. It is urged in the first place, that the only evidence we have of anything in ourselves beyond bodily processes is our experience of our own conscious processes. And the only things which we can call 'mind' or 'mental' with any intelligible meaning are these conscious processes. Anything in us which is neither conscious nor physical is therefore something unknowable and indescribable, or indescribable except in purely negative terms. But if the Unconscious is thus merely a negative idea, something of which all that we can say is that it is not physical and not conscious, then it ceases to be anything which could be given as a real explanation. It is simply an X, an unknown cause. And to ascribe anything to it is simply a confession of ignorance.

This, of course, would not be admitted by the advocates of the claims of the Unconscious. And we find them, accordingly, continually speaking of the activities of the unconscious mind in exactly the same terms as of the activities of the conscious mind, so that we hear of unconscious desires, emotions, wishes, fears, or of unconscious thoughts or memories. These unconscious mental processes as Dr. Ernest Jones tells us (*Papers on Psycho-Analysis*, p. 121) "present all the attributes of mental ones, except that the subject is not aware of them". And consciousness thus becomes, he says, "merely one attribute of mentality, and not an indispensable one". I have searched in vain for a clear statement of what the other attributes of mentality are which these processes do possess. And when I reflect on what I mean by a wish or an emotion or a feeling, I can only find that I know and think of them simply as different forms of consciousness. I cannot find any distinguishable element in these experiences which can be called consciousness and separated from the other elements even in thought so as to leave anything determinate behind. And to ask us to think of something which has all the characteristics of a wish or a feeling except that it is not conscious seems to me like asking us to think of something which has all the attributes of red or green except that it is not a colour.

I believe that everybody really feels this difficulty, and the result is that many writers slip into a way of talking, and I believe at times of thinking, of the Unconscious as of another conscious person of exactly the same kind as the conscious

personality that we know, which exists alongside it and every now and then affects it in some way or other, so that to explain an event by referring it to the Unconscious becomes just the same kind of explanation as to say that something was done by John Jones instead of by Tom Smith. But whatever the Unconscious is, it is not that. Or else we are invited to take refuge in spatial metaphors, to talk of different levels or regions of the mind, and to think of it, perhaps, as a box with a false bottom and a hidden receptacle underneath, which contains all sorts of objects. But this, like the other attempt to describe the unconscious mind, only ends by describing something else. And there is clearly something wrong with a conception of the mental which can only be described in metaphors drawn from the material.

These are purely general considerations. To come to closer grips with the subject it is necessary to examine the considerations which are supposed to make it necessary to assume an Unconscious, and the kind of occurrences which are supposed to be explicable only on such an assumption. And in this connexion I should like to give a brief consideration to a typical case, the case of claustrophobia, of which we have such an admirable description by Dr. Rivers in one of the Appendices to his *Instinct and the Unconscious*. In this case, it will be recalled, an event took place in the early history of the patient which aroused in him acute fear at the time. The event was forgotten, so completely that it could not be recalled by the ordinary method of remembering. But the emotion, or the tendency to the emotion, remained, and was aroused in the patient whenever he was in a situation similar to the original one in the respect that it was in an enclosed space.

Now how does Dr. Rivers describe what happens here? Note, in the first place, that he does not say, as I should say, that the person is no longer conscious or aware of the past event. He says that the event itself, which he calls the experience, becomes unconscious. That is to say, he holds that the past event or experience continues to exist in the form or in the place which he calls the Unconscious. The evidence for this is (1) that the results produced by the event continued in the permanent form of Claustrophobia; (2) that by the methods of Psycho-analysis the patient can be brought to remember what happened. But do either of these facts necessitate such an assumption? Or are they made any more intelligible by this way of talking? Let us consider them in turn.

(1) Confining ourselves to what is absolutely beyond doubt in the case, we can say firstly that the past event—of

which, of course, the person was fully conscious at the time—is forgotten. And secondly, it is clear that the event produced such an effect on the nature or disposition of the patient that in the future he always feels fear in enclosed spaces. This feeling, again, is not in any sense unconscious: the patient is, of course, only too conscious of it.

But what I want to know is why the effect which the event produced on the person should be described as if the original event somehow went on existing and working? And I can see no reason for it at all. We do not think it necessary to talk like that in any other connection. Many events in this physical world produce permanent results beyond themselves. But we do not, except in a very figurative way, speak of the event as continuing to exist or as going on happening somewhere. Nor, indeed, would it really be intelligible to do so. An event, whether in the physical world or in conscious experience, when it has once happened is over and finished. It is not in any sense a thing in itself with a permanent existence and a capacity for different kinds of action. When an event produces a result, the result is something other than itself and cannot be described in terms which imply the continued existence of the event which caused the result.

In what terms, then, can we describe the result, in a case like that which we are considering? The actual result of which we can be quite certain is the appearance in the consciousness of the patient from time to time of a particular emotion in particular circumstances, in this case, the emotion of fear in enclosed spaces. And from that we conclude naturally that there is something permanently there in the nature or characteristics of the person which leads to that feeling being aroused in these circumstances. That is to say, we suppose a certain permanent disposition or tendency to feel fear in enclosed spaces.

Dr. Rivers expresses some scorn of those who assume psychological dispositions, and declares that they are positing "purely hypothetical factors, when those open to direct observation fail them". This is a curious reproach from an advocate of the existence of the Unconscious, which is, if anything is, a purely hypothetical factor and in no conceivable sense open to direct observation. But in any case it entirely misconceives the real meaning of the conception of dispositions or tendencies. To begin with, something of the kind is not a mere hypothesis, but a necessary inference, and one universally made whenever, for instance, we speak of a man being bad-tempered without meaning necessarily that he is at that moment actually feeling anger. But it is also

necessary to point out that, if we know what we are doing, we shall not make very exaggerated claims for the idea. We shall not, for instance, make the claims for it that are made for the idea of the Unconscious, nor put it forward as an explanation in the sense in which that idea is put forward. It says simply that if a human being, or indeed any other kind of being, behaves in a certain way (using 'behave' in the widest sense) from time to time, there must be something there in the nature of that being which leads or predisposes him to that kind of behaviour under certain conditions. There must be a permanent, or relatively permanent, mental structure, to use Prof. McDougall's phrase, which expresses itself in that particular kind of mental activity. But of what sort of thing this mental structure is we know nothing, apart from the particular kind of activity to which it leads. We can only speak of it or think of it, as a tendency or disposition to this or that kind of activity. While mental function or mental activity we can only know or think of as some kind of conscious experience.

We cannot, perhaps, even say with any certainty whether this mental structure is really mental or physical. If we adopt the latter alternative, we should have to say that a certain kind of arrangement of the physical structure of the brain and body is all that is necessary to give rise to certain kinds of conscious experience in certain surrounding circumstances. Such a view could certainly not be dismissed as untenable. It would, I take it, be held by Prof. Alexander or by Dr. Bosanquet. It is implied in the remark of the latter, quoted with approval by the former; "It seems to me that the fertile point of view lies in taking some neuroses—not all—as only complete in themselves by passing into a degree of psychosis". We might, on the other hand, feel obliged to maintain that there is something, a definite individual existent, there which we can call a mind and which we believe to be made out of some stuff which is definitely not material and which we can properly speak of as mental or psychical. In such a case, we should have to suppose that this mind has certain determinate characteristics which in given circumstances will lead to a certain kind of conscious activity. On this view we could never, so far as we can see, hope to arrive at any kind of knowledge of what this permanent structure was like apart from the conscious activity to which it leads. Whereas if we adopt the former alternative, we could, I suppose, ideally at least, look forward to an increase in our knowledge to a point at which we could know what kind of material pattern in our nervous system

constituted the permanent tendency to this or that kind of behaviour.

If we adopt the physical view, it is sufficiently obvious that there is no need and no room for the Unconscious or unconscious mental processes. Explanation of anything that takes place in consciousness, which cannot be sufficiently accounted for by previous events in consciousness, can and must be looked for in physical processes. And this view cannot be dismissed lightly. If it is rejected, it can only be as a result of very careful consideration of very much wider questions than those which we are now discussing. As a methodological assumption it will work just as well as the hypothesis of unconscious mental processes. It is no doubt true that, at any rate in the present state of our knowledge, these physical processes are absolutely unknown to us and a pure assumption. But then so are the supposed unconscious mental processes. And there is this difference between them. We may not know anything about the physical processes in any particular case. But at least we have in general some idea of the sort of things that we are assuming. Whereas, if we postulate unconscious mental processes we have not even any idea of what kind of things they could be like. As suggested above, if we try to describe them we inevitably find ourselves using metaphors which deprive them of just those characteristics which we are most anxious to assert of them, and describing them as another set of conscious activities or as material occurrences in space.

The case is rather different if we believe in the existence of a mind as a separable or distinguishable entity. Here obviously, we can, with proper precautions, speak of unconscious regions of the mind, indicating by that the mental structure as opposed to mental function, the permanent dispositions or tendencies in the mind which are not at the moment active, the bad temper of the man who is not angry at the moment. But these, of course, would be something very far short of the Unconscious of the 'new' psychologists, which is or involves active mental processes.

But besides this, if we suppose a mind, we cannot refuse to admit the possibility of processes going on in that mind besides the conscious processes which we are aware of. This would be the real Unconscious. But, if we assert such processes, we can only describe them negatively by saying of them that they are processes in the mind which are not conscious. We can have no idea of what their positive characteristics are, because they cannot be like anything of which we have any experience.

But is there really any necessity thus to erect an altar to the Unknown God? It is generally claimed that this necessity arises because we find events in consciousness which cannot be adequately explained by preceding events in consciousness. I am not perfectly convinced that the fact is as stated. In the case of Claustrophobia, for instance, so far as I can see, all that we know to be there and all that we need assume is, firstly, an event in consciousness and then the result which it produces, that is, a lasting effect on the mental structure of the patient in the form of a disposition or tendency to another kind of conscious experience, namely, the emotion of fear in enclosed spaces. But this disposition or tendency only becomes active when, under the appropriate stimulus, the emotion is actually felt. I can see no ground for supposing that there is anything actually occurring, any active process, involving some kind of change or some series of events, going on in the mind outside consciousness altogether. Indeed the facts seem to me to tell the other way, for the reason that the tendency apparently remains unchanged in character, producing similar results in similar circumstances, until the patient is cured by the production of an event which is definitely in his consciousness, *i.e.*, the recollection of the original event and the realisation of the connexion of that with the emotion. I would not, however, assert without much further investigation that all the supposed cases could be accounted for on these or similar lines. But even supposing that we are presented with a case in which it seems necessary to assume that some process actually has gone on over a period of time which was not, while it was going on, accessible to consciousness, are we necessarily bound to assume that this process is a mental one? If we believe, as everyone really does in practice, in the interaction of mind and body, the process may just as well be a physical one. And the assumption has, as has been pointed out above, at least the advantage of intelligibility. It is only the dwindling band of stern and unbending psycho-physical parallelists who will feel themselves obliged to assume that the process is mental in character. And even for them, it is necessary once more to insist, the assumption gives no information and makes nothing any clearer or more intelligible. It only has to be put in to preserve intact the metaphysical doctrine of parallelism.

(2) We come now to the second line of argument. That is the view that, because an event in the past has been forgotten and can be recalled by certain methods, we must therefore suppose that the event has been existing all the

time in the unconscious regions of the mind. There is no doubt that the discovery of these particular methods of recalling forgotten events is a discovery of the greatest practical importance in the diagnosis and treatment of psycho-neuroses. But for the purposes of this discussion, and in general considered as throwing light on the fundamental problems of the nature of mind and experience, it does not appear that there is any difference in principle between these special cases and any other case of remembering. There are all possible degrees of difficulty in recalling different events, and many different methods by which we can do so. The discovery of one more method of particular efficacy in certain cases does not affect the general nature of the processes under discussion.

The question really resolves itself into this: When an event has taken place of which we were aware, and we remember that event afterwards by whatever method, does that mean that in any sense the event has continued to exist in any region of our mind all the time? I believe that in this connexion, as in so many others, a great deal of confusion arises from the use of that most dangerous word 'experience'. In reading Dr. Rivers' book, for instance, I find him constantly speaking of an unconscious experience where I should speak of a forgotten past event, with the apparent implication that the whole event is in some way a mental occurrence.

With this we are obviously face to face with the great question of the relation of mind to its objects. In any act of knowing what is "in" the mind, or mental (for I can conceive of no meaning of the spatial metaphor 'in' the mind, except that it is mental in character),¹ and what is 'outside' the mind or physical? This is, of course, one of the burning questions of modern Philosophy, and obviously, I cannot discuss it here. But I mention it because it seems to me obvious that it is a question on which we must make up our minds before we can begin to think clearly in Psychology at all. For surely a science which attempts to describe in any way the nature of the mind or consciousness or the mental, is bound to give a clear account of what is mental and what is not mental in such a typical event as an act of cognition. Unless we are clear about this we cannot possibly arrive at

¹ No doubt on certain views, such as those held by Prof. Alexander, we can speak of an object having spatial relations to the mind. "In" the mind, then, would mean strictly in the brain. But, of course, there is no question of a physical object, of which we are aware, being inside the brain.

a clear idea of what kind of thing we believe the mind and mental processes to be. We cannot get out of it by dismissing the question as Metaphysics, just because its solution demands a considerable amount of effort and hard thinking.

If we take, as I do, a Realist view of these matters, it is obvious that it is impossible to accept any description of the 'experience' as continuing to exist and to act in the mind. This way of thinking of an 'experience' as a detached object working on its own in this way or that would have difficulties, I should imagine, for any school of thought. But the special objection of the Realist would clearly be to the failure to distinguish the object known from the knowing of it. This confusion is particularly easy in the case of memory. If we see a dog, it needs a considerable amount of training in certain schools of Philosophy for us to persuade ourselves that the dog is 'in' our minds. But when we remember a dog that we had seen, as the dog is not obviously 'there,' it is much easier for us to imagine that the poor animal has somehow fallen into the 'well of memory,' (or got shut up in the 'storehouse'), and that we are now engaged in fishing him out. It is only when we drop spatial metaphors, and realise that a thing cannot be 'in' the mind unless it is mental in character, that it becomes clear that a dog or any other object that is not mental when we see it certainly cannot entirely change its nature and become mental when we remember it. There are plenty of difficulties and obscurities in the nature of the process of remembering, on any theory. But I am perfectly sure that on no theory are any of these difficulties removed or lessened by supposing that the object or event remembered is in any sense 'in' the mind.

I find this way of thinking constantly appearing in all attempts to describe the Unconscious, as when we are told by the Psycho-Analysts that the content of the Unconscious consists of repressed infantile experiences. No doubt, for their particular practical purposes these metaphors may be harmless and even, up to a point, helpful. But when they are put forward as a serious account of the nature of the mind or mental processes, they become, in my view, misleading and mischievous.

I have left myself no space for a detailed examination of any other case where it is supposed that we must assume Unconscious mental processes. I think there are few of them to which some, at any rate, of the above considerations would not apply. But I cannot help being struck, in reading the accounts of these cases, by the slightness of the evidence

that seems sometimes to be accepted that the mental process really is unconscious. After all, with all our tests, we have in the end to come for our final evidence for the presence or absence of anything in the consciousness of a person to the statements of the person himself. And we all know how easy it is to misdescribe what is really going on in our own consciousness. This is so even with a perfectly honest attempt; and when we take into account what Jowett described as "the amount of good hard lying that goes on in the world," the statements of a neurotic patient do not seem a very certain foundation on which to build our conclusions. Nor, for the matter of that, are the statements of anybody else in all cases. We most of us at one time or another know what it is to have thoughts or feelings which we should be very loath to put into words. But they are none the less conscious for that. This is really a minor point. But apart from that, there are, of course, at any moment many things going on in our consciousness, just as there are many things in the outside world within our field of vision, on which our attention is not focussed. We do not, therefore, think about them; we do not recognise their implications or connect them up with the rest of our experience. And, therefore, we often do not remember that they were there even a few minutes afterwards. But once more they are certainly conscious processes at the time they take place.

These are apparently what Dr. Rivers calls "sub-conscious processes". At least, so I judge by his description of these latter as "processes which only differ from other mental processes in the lesser degree of distinctness and clearness with which they can be observed". And he criticises those who speak of such processes as "failing to recognise that they were only evading a difficulty by clinging to a simulacrum of the conscious, the existence of which was just as hypothetical as any of the constructions of the thorough-going advocate of the Unconscious". Unless I entirely misunderstand this, it seems to me really an amazing statement. For it characterises as purely hypothetical the familiar distinction between the focus and the margin of consciousness, which I should have called an obvious fact of experience which any one of us could verify for himself with the utmost ease. If I am right, it is clearly a fact of importance for the present discussion, because it means that there are always a certain number of conscious processes going on and a certain number of objects of which we are aware which we may not remember about at a later time. This makes it impossible to say with any certainty that conscious processes at one time cannot be

adequately explained by previous processes which were just as conscious, because we can never be sure about what previous processes did actually occur. We can never assert positively that the explanation of anything must be looked for in something outside the "stream of consciousness" altogether, because we never have exhaustive knowledge of all that is or has been in the "stream of consciousness". And if this is true it certainly weakens seriously the alleged necessity of assuming unconscious mental processes as an explanation.

This, then, is a very brief and inadequate outline of my case against the idea of the Unconscious or of Unconscious mental processes. I cannot accept it because I cannot attach any meaning to it and cannot see any necessity for it. Further, in the modern form, it seems to me to mix up many things or many problems which ought to be kept separate; to confuse, for instance, the problem of the nature of mental dispositions with that of the nature of the act of memory. And I believe that it, at any rate in this form, implies a false view of the nature of mind, of the relation of mind and body, and of the relation of the knower and the known in an act of cognition. But I should not like to leave the subject without a word of tribute to the work of many of the writers who have advocated this idea. Particularly to Dr. Rivers, whose book seems to me, if I may say so without impertinence, one of the ablest and sanest of the statements of modern tendencies in Psychology. Apart from this unfortunate business of the Unconscious, I have learnt more from it than from almost any other recent work on these subjects.

II. BY F. AVELING.

I MAY say at the outset of this small contribution to our symposium that I am largely in agreement with Mr. Field. When he asks, at the beginning of his paper, whether the conception of the Unconscious helps us to understand more clearly what sort of thing the mind is, or what sort of thing the concrete human being is, I am inclined to believe that it does not take us very far, and certainly not to the point of adequate philosophical explanations *per causas*. But I do not agree with him in thinking that it leads to a positively erroneous idea of the nature of the mind and of certain mental processes. It is true that Mr. Field qualifies his statement with the words "as it is used by some modern writers". I shall not undertake to defend any views that may be held as

to the Unconscious; but merely to show that there is a sense in which the conception may be valid and of service in psychology. But, in order to do this, it is necessary to examine at least two of the terms in the enunciation of the present symposium which need definition; and with regard to one of them—the Unconscious itself—Mr. Field finds that he can attach no meaning to it at all. It may be an unfortunate term; it may have led, and lead, to misunderstandings; but it has a meaning for empirical psychologists none the less which it will be my task to consider in the course of the present paper. I shall use the term "Unconscious," then, to signify something which is experiential in character; that is to say, something which at one time actually formed part of experience, and of which the subject of the experience may also have been aware; something which, in appropriate conditions, may (or may again) come to awareness; something, however, which is not now part of awareness. To add to this characterisation of the Unconscious that this something, not now part of awareness, may only be made part of awareness by means of methods such as those of psychoanalysis, is merely to specify a more generic use of the term. This signification "links up" the Unconscious, by way of the Sub-conscious and the minimal, with the maximal degree of awareness. I am not now concerned with that other Unconscious which, of its nature, can never directly form part of awareness at all—that "unconscious psychic" which is essential or dispositional rather than experiential; which yet may be necessary as a concept, as is matter or force in physics or substance in metaphysics, for a final completion and explanation of the science of psychology.

A second term which requires definition is "Psychology"; for it is used ambiguously. It may mean psychology the science in the strict sense; or it may mean psychology in the older, transcendental and metaphysical sense. Mr. Field apparently accepts it in the latter of the two meanings. His universe of discourse is a metaphysical one—and perfectly legitimately so. But the psychologists who find the conception of the Unconscious useful in their scientific work, conceive psychology itself in an empirical, non-transcendental manner. I believe that in such a distinction lies the explanation of the divergence of views as to the value for psychology of the conception of the Unconscious.

There is no need to turn to the region of abnormal or pathological psychology for data to support this conception. Mr. Field appears to allow that it may be of some practical value there; and, when he gets to close grips with his topic,

he examines the case of claustrophobia, cited by Dr. Rivers, as a sample of one of those "occurrences which are supposed to be explicable only on such an assumption". But he implies elsewhere in his paper that this region of the pathological is debarred to the theoretical psychologist as not belonging to psychology in the "proper sense". Against such an implication I may allow myself to make a protest in passing, on the ground that the abnormal in consciousness is as much the subject-matter of psychology as is the normal. If, indeed, the conception of the Unconscious should be one which arises only in connexion with abnormal processes, it would still have rights of citizenship within psychology in the "proper sense". But the conception arises, though perhaps in a less restricted and technical sense, in psychology in connexion with the ordinary processes of everyday mental life; and it is as useful there as it is anywhere else. So we may well limit ourselves in our consideration—though I do not agree that the title of the symposium defines these limits for us—to an examination of the normal processes of consciousness.

I conceive the starting-point of the science of psychology to be an examination of the data of consciousness: *i.e.*, awareness; and its end a statement of the laws of their concomitances and successions. When all the data have been examined—the "objective contents," and the "static" and "dynamic" states—and when the laws have been formulated, it will be found that certain hypothetical elements have been necessarily introduced to complete and round off the whole after the manner of a science. But those hypothetical elements will be—or should be—appropriate to the original data. They should not, unless it is impossible to complete the science otherwise, introduce characters which the original data do not display.

Later on, of course, certain concepts may be introduced and explanatory theory devised to account for the occurrence of the data in question; or for the fact that it has been found possible to state any "laws" in their regard; or for the further fact that empirical beliefs have been discovered among them, the objects of which are trans-empirical. But that is not, strictly speaking, a matter with which psychology, considered as a science, has any concern.

What is, however of the greatest importance to observe is that all the data, or "processes," of consciousness which come to awareness are, in one respect at least, of exactly the same character. They are all mental. The object known, as known, is as much subjective as is the static state of

pleasure or the dynamic state of intention. The latter are as much objective as the first. Indeed, none, properly speaking, as far as they are considered as conscious facts or processes, can be characterised as either objective or subjective, except in so far as these are useful categories for the classification of mental occurrences. They are all without exception essentially mental in character. From the psychological point of view, and regarded solely as conscious processes, the subject-object distinction seems to be out of place. Everything is subject, or everything is object, as you please.

If psychology is to be a science, then, it must keep to this point of view; for that, after all, is no more than the general method of science.

We may find a parallel in the physical sciences. In all these abstraction is made from the fact that the data with which they deal are in reality mental; and these are considered as if they had a real existence in a world indifferent to mind. That is the method of these sciences; and those who profess them do not trouble about its justification, which—as far as they consider it at all—they leave to the philosophers. But, in arranging and explaining the data, considered thus abstractly, each science keeps to its own point of view; each introduces hypothetical elements, where these are necessary, appropriately similar in kind to the original data, to complete and round off the whole; and, finally, each turns to philosophy for an explanation by trans-empirical concepts.

Consider, for example, the flight of an arrow, and that of a bullet fired from a rifle. In the one case, there may be data observable from the moment when the arrow is fitted to the bow-string to that when it is fixed in the target. In the latter case, there may be no such data; but ballistics assigns relative position, as part of the hypothetical data, throughout the whole course of the flight. What has been said as to completion by hypothetical elements is largely, if not entirely, true of the physical sciences taken singly. It is altogether true of them taken as a group. "Physical" occurrences are observed and related; "physical" laws are formulated; and the whole is completed with hypothetical "physical" data, and ultimately with "physical" concepts, the character of which is strictly non-mental.

Psychology, as a science, pursues a similar method. It completes its observations and relating of data with hypothetical elements similar in kind to the original data. And it is here that the conception of the Unconscious naturally arises. Whatever it is, it must be appropriate to the data;

that is, it must be mental, or "conscious". It is no real objection to urge against this conception of the Unconscious that its nature cannot be known, as things are known by inspection; for that is true as well of the physical hypothetical elements—and indeed also of the physical concepts. The Unconscious can only be known by reflexion upon what it does. It provides a nexus, or principle, for the explanation of the processes which occur in awareness. Its nature, then, will be consonant with these; and it will be inferred from these. There is, however, another than the theoretical reason given above for the assertion of the conception of the Unconscious. And it is this. The field of awareness itself is distinguishable into areas or zones of differing degrees of clearness—or, rather, is continuously differentiated in this respect from the point of maximal to a margin of minimal clearness. Direction of the "Attention" can shift the focal point of clearness from one point of the field to another; indeed, can cause to rise into the focus a content which was not at the moment in the field at all, but in Sub-consciousness—as when one is trying to recall, and successfully recalls, a forgotten name. These two observable facts lend support to the conception of the Unconscious as continuous with awareness and the Sub-conscious, and in some respects, at any rate, as obeying the same laws. For the unconscious processes can come to awareness, by the use of appropriate methods, in a similar way to the Sub-conscious processes, and can be made to enter the focal point in a way similar to that in which the marginal processes can.

I am here, of course, referring principally to the Unconscious in the generic sense indicated above, as consisting of that of which we may or may not have been, but are not now aware. In the specific, technical and psycho-pathological sense, the Unconscious cannot thus be directly brought into the field of awareness by any of the ordinary means at the disposal of the subject, or patient. Indeed, as Dr. Ernest Jones points out, "the attempt to explore them (unconscious processes) and make them conscious is always accompanied by manifestations of active opposition on the part of the subject." (Symposium, "Why is the Unconscious unconscious?" *B.J.P.*, Vol. 9, Part 2, October, 1918.) This refers to that group of unconscious experiential processes which, whether racial or personal, apparently lies beyond the power of translation into awareness, or recall, on the part of the subject. Yet, even here, these dissociated processes would still appear to be in continuity with the Unconscious in the generic sense, since, though they cannot be brought to

awareness by the patient, they can become processes in awareness by the use, on the part of the analyst, of methods by which the active opposition of the patient is overcome. And the methods used do not appear to involve any new laws, but only to apply the old ones with good effect.

Mr. Field finds himself unable to accept this conception, and he puts forward the two alternative views, as at least conceivable accounts of the matter; that, on the one hand, consciousness may depend upon the physical structure of the brain and body; on the other, that it may be the function of a relatively permanent mental structure. Philosophically, I might agree with him in accepting one of these alternatives. But the first of these views is unacceptable to the empirical science of psychology as an explanation, because it goes outside the data, and indeed makes use of "data" that not only are not given, but are even supposed to be of a totally different character to those that are given. The second view is no less unacceptable, for it seems to involve the denial that statements of scientific laws are possible in psychology at all. If the webs of antecedents and consequents are not complete, there can be no such statement. I take it that no empirical psychologist—not even the empirical psychopathologist—holds of the unconscious processes that they are in everything *identical* with those which enter into the region of awareness. The use of the term Unconscious would negative any such supposition. But I take it also that no philosopher would conceive of "mental structure," and "function" as something which necessarily precludes the possibility of the empirical conception. Mental structure might conceivably underlie both Awareness and Unconsciousness; and both might be its function. It appears to me that a very old philosophical distinction may usefully be applied with regard to this matter; that the potential must be distinguished from the actual; and that the processes which occur in the region of awareness are the actual analogues of those potential processes which are held to belong to the region of the Unconscious. In how far the potential processes may resemble the actual seems to me to be a rather otiose question—one that should not, and certainly need not, be raised. It may be that they are identical with these save in the property of being "conscious". To suppose that would be to imagine these processes in some respect after the manner in which conscious ideas were imagined in Associationism. It may be that they resemble them in no such sense at all. Or it may be that they resemble—I adopt the distinction from Dr. Rivers's contribution to the symposium already cited—the

instincts, as contrasted with the "discriminative and intelligent" higher processes of awareness.

Now, this last possibility appears to offer some help towards defining the Unconscious in such a way that it will be acceptable both to the empirically methodological psychologists and to those whose principal interests lead them to take a metaphysical view of the question. Every complex of conscious awareness consists of three discriminable elements or aspects. In every conscious complex we may discover cognition, conation, and affection. It is only by abstraction that they can be separated, though any one of them may, at any given moment, dominate the other two. For pure empirical psychology each of these is an element or aspect in its own right, and of equivalent value to any other; for each is a discriminable element or aspect in the given of that experience of which we are aware. But there are discoverable limiting cases in which the cognitive element or aspect so sinks in intensity that the experiencing subject is hardly, if indeed at all, aware of it, the while he is actually and vividly living the experience of an affective state brought about by a stimulus which is capable of producing both. Similarly, the cognitive and affective elements or aspects in a complex may conceivably be minimal—indeed, in certain phases of the act of choice seem actually to be minimal. And the effect which a previous volition (as such) now forgotten (or sunk beneath the level of conscious awareness and functioning as a "mental set") has upon subsequent processes of awareness is well known. Evidence of this kind is abundant in such researches as those of Ach, Michotte and Prüm, and others.

But if cognitional awareness can sink to a minimum, leaving a lived experience of affection; and if conscious volition can become unconscious and still influence the processes which develop in awareness; it would seem that we have some direct evidence that the Unconscious is a valid conception and a useful one for psychology. For, here again, the processes of which we are aware and those of which we are not aware, or have ceased to be aware, seem to obey the same laws, functioning indifferently as antecedents to the same sort of consequents, and *vice versa*. An impulsive act is in this precisely similar to a voluntary act or to an act of choice; the only difference lying in the condition of the voluntary act (that there is prevision of the end); and in that of the act of choice (that the realisation of the volition is conditioned by the appearance of the alternatives between which, and the discussion of the motives according to the

evaluation of which, it is to be made). But the volition may not be a conscious one, and generally is not, when the act of choice takes place. For such reasons as these all three processes (including the impulsive or instinctive) have been classified under the head of volitional acts. Now, instinct is generally supposed to be blind or unconscious in its teleological character; yet it is not too much to say that it has every mark of consciousness, and purposive consciousness, as far as its effects are concerned. So much is this evident that instinct has been accounted for on the ground that it is "lapsed intelligence". Without wishing to adopt that theory, there would seem to be no reason to reject a possible view which would make of it a lapsed conscious awareness of some sort, not unlike that which might be asserted of a consciously (and, originally volitionally) acquired habit which, later on, comes to be carried out automatically and unconsciously. Some such line of consideration as this would allow us to link up what I have distinguished as Unconsciousness in the generic sense with Unconsciousness in the more specific sense in which the term is used by the psychopathologists. And thus, by opposing original instincts and original mere experiences, together with complexes which have been extruded from personal awareness by reason of the many and varied sanctions of civilised life, to complexes which have not been so extruded, we should understand how those conflicts which may issue in the morbid processes studied in psychopathology come to be established in the whole mentality.

Instinct, as a native impulsion anterior to all individual experience, though there may be a cognitive antecedent to energise it, is certainly not conscious until it has functioned. But it links up with conscious volitions through, and in continuity with, "mental set". In other words, there is, or at least can be conceived, a continuity between the volitional processes which occur in awareness and those which do not so occur. And this may most easily be conceived as a continuity of the similar in kind, as well as a continuity due to the fact that both, again, may be antecedents or consequents in similar sequences, *i.e.*, both obey similar laws. Whether actual or potential, then, whether conscious or unconscious, both cognitive and volitional processes exemplify the same laws, and may at least be conceived as in some sense similar.

A parallel line of consideration might be pursued with regard to the affective aspect of the complex; and on this, no doubt, the psychoanalysts lay great stress.

But I need not, perhaps, elaborate further than I have

done to show that the conception of the Unconscious has a value for psychology the science. It is no more than a conception in which sequences which are incomplete to inspection are completed by the assumption of the existence of processes or elements of a similar character, barring the one note of awareness. But these processes or elements can be made actual even as regards awareness. They may therefore be considered as potential processes or elements of awareness. To explain the facts in any other way than by assuming potentially empirical data of a similar kind to that which is given is to step beyond the boundaries of the science. To assume a mental structure capable of functioning because of its tendencies is, for the empiricist, either to assert what has been suggested in this paper or to assert nothing knowable or verifiable. For what is a tendency, and how can it be defined save by referring to that actual towards the realisation of which it is a tendency? To suppose that tendencies cause awareness, using the term in its transcendental sense, or that the mental structure causes awareness through its tendencies, seems, from an empiric point of view, to have far less meaning than to suppose that a hypothetical Unconsciousness causes awareness in the scientific acceptance of the word cause. For transcendental causes cannot be observed.

And further the criticism aimed at the theory in question by Mr. Field—that it leads to the conception “of the Unconscious as of another conscious person of exactly the same kind as the conscious personality we know, which exists alongside it and every now and then affects it in some way or other, so that to explain an event by referring it to the Unconscious becomes just the same kind of explanation as to say that something was done by John Jones instead of by Tom Smith,”—can only be a valid criticism if it does in fact necessarily lead to such a conception. And it does not, I suggest, lead to that at all if the whole matter is treated empirically; though I admit that it may lead to it if awareness and Unconsciousness and cause are taken in their metaphysical implications.

It can only be because Mr. Field takes the transcendentalist point of view here, and credits empiricists with taking it also, that any such apparent difficulty arises. If Tom Smith who, for the empirical psychologist, is the sum total of processes occurring in awareness, be completed empirically by the sum total of “unconscious” processes which, similarly, are John Jones, the addition of the two will not constitute two “persons,” but one complete phenomenal

consciousness—Thomas John Jones-Smith. Indeed, there would not be even one "person" so constituted; for it could hardly be asserted that a phenomenal consciousness, no matter how complete, was a "person". But this conception has, none the less, the advantage of remaining within (at least theoretically possible) empirical limits, and of providing a ground for the establishing of scientific concomitances and sequences, without the necessity of having recourse to metaphysical notions.

I do not wish it to be understood that I in any way imply a denial that metaphysical conceptions may be necessary for a final explanation of the facts. Mental structure and tendencies, brain and body—or, better perhaps, the substantial individual which we call "man"—may, in the last resort, be the only principle by which the occurrence of experience, or awareness, can be accounted for at all. I believe that to be so; that psychology, like any other science, must be completed by philosophy; and that its data must be ultimately interpreted by means of metaphysical concepts. But I also hold that it is, or can be treated as, a science. And, in that aspect, it would appear that a good case can be made out for the conception of the Unconscious.

In the course of the present paper I have made use of spatial metaphors, and therefore have come under the condemnation of Mr. Field that there is clearly something wrong with my conception of the mental. My plea must be that the metaphors in question are convenient ones; that analogies are not out of place in treating a matter of this kind; and that "levels," "regions," etc., are given within experience—else there could be no awareness of them at all. Moreover I have not used them with a spatial implication. They are metaphors. In a similar (though again not, of course, in a spatial way) Mr. Field himself uses the metaphysical conception of "activity" to justify his conception of "mental structure," as expressing itself in a particular kind of activity. That also seems to be a metaphorical use of the term; and it, too, would be impossible unless some such thing as the "consciousness of action" were given in experience.

I am also conscious of the fact that, in drawing the distinction between the potential and the actual, I may be met with the objection that I am going beyond the data of experience, and attempting to solve a difficulty as a realist might attempt to solve the difficulty of the problem which arises as between things and things known. But I do not consider that to be a serious objection.

I am suggesting throughout that the Unconscious is a useful conception in the science of psychology. To do this I have endeavoured to point out that *something* must be supposed in the place of processes which do not occur in awareness to explain what sometimes (indeed generally) does happen in awareness. I have underlined the conception of psychology as an empirical science, and pointed out that it must be governed by the method that is imposed upon sciences which profess to be empirical. I have put forward instances to explain why the Unconscious is postulated as a conception to complete the science of psychology without doing violence to its method. And I believe that the evidence which I have submitted is sufficient to justify the conception as both legitimate and of value in that sense in which it may be applied to, and used as explicative of, the observed facts.

III. BY JOHN LAIRD.

AT this time of day, and with present fashions what they are, it may seem absurd even to raise the question of our symposium. The triumphs of the New Psychology—as exciting, we are told, as *The Origin of Species*—may seem to have answered it beyond all cavil, so that objections are futile and doubts *démodé*.

This view, I believe, is profoundly misleading. The new psychologists, to be sure, assume the existence of the unconscious, both as a storehouse and as a factory; they profess to discover significant and thrilling contrasts between its more accessible and its darker regions—all of which is, somehow, vastly important. This, however, does not prove that the unconscious is a valuable conception. Properly speaking, indeed, it may not be a conception at all. Is it intelligible? Is it regulative? Does it compel any specific deductions? Does the evidence imply it logically? So far as I can see, the new psychologists need not answer any one of these questions in the affirmative, and their discussions of all of them are either perfunctory or non-existent. Fundamentally, this notion, such as it is, seems to be only *permissive* in use. The new psychologists need to assume something retentive and capable of various developments; something, moreover, which, quite plainly, is not conscious and yet seems to play an important (and perhaps a dominant) part in our mental history. This they call the 'unconscious,' and we need not

quarrel with them for doing so ; but there is a case for dispute, surely, if this negative name is used to conceal and not to assert our ignorance, if this permissive thing is proclaimed to be a key-conception, if this nest of problems is taken to be a squadron of solutions to them, and if positive properties are assigned to an enigmatic somewhat for no better reason than simple light-heartedness.

If this be so, it is plain that the subject of our symposium really is important—and important for reasons that have no peculiar connexion with metaphysics. In its permissive sense, the unconscious is not even a working hypothesis. It is only a proclamation that the work is to go on irrespective of certain theoretical difficulties ; but if it were a working hypothesis, it would still be the duty of empirical psychologists to examine it with the utmost rigour. The approach to the sciences is decked with bright ideas, but there is no science until these ideas are put to the proof. The evolution of species, say, or the transmutation of the elements had to be thought out in order to become something more than an attractive and stimulating notion, and it would be foolish of us to expect that the growth and the sublimations of the 'unconscious' will reveal themselves, in a fury of infantile 'exhibitionism,' to more impatient eyes.

Our problem, of course, is not the value of the New Psychology, but the specific value of the New Unconscious ; and although explanation would be needed, it would be quite consistent to hold that the former is epoch-making and the latter pernicious. Keeping to the latter, then, we have to ask whether any intelligible notion of the unconscious can be put forward, and, if so, what. I can make nothing of Mr. Aveling's 'experiential' somewhat, of which we *may also* have been aware, which responds so amiably when we 'link it up,' but fails to recognise the difference between *being* an experience and *having been* one. Therefore, with regret, I turn to other theories, and apart from vague and irrelevant references to Leibniz's *petites perceptions* and the like, I find that the favourite account of the unconscious is the one which Mr. Field has quoted from Dr. Jones. Thus Bleuler¹ states that he 'understands by the unconscious all those operations which are in every respect similar to the ordinary psychic ones with the exception that they cannot become conscious' ; and many of the others say the same thing.

This definition really is preposterous. It is just like Mr.

¹ Quoted by Varendonck, *The Psychology of Day-Dreams*, p. 19.

Churchill's 'cannibals in all respects except the act of devouring the flesh of the victims'. It is worse than epiphenomenalism. As we all know, our consciousness is only a part of a complicated pattern of processes, very imperfectly known, although known to have some connexion with the cortex and, in certain cases, to have more specific connexions with definite cortical areas and with the optic thalamus. It is therefore a permissible, although a rash and improbable view that consciousness is only the upholstery of this self-moving machine, and that the combustion engine is outside consciousness altogether, but it is not at all permissible to contend that there is really no difference in the case. What in the world would consciousness be if it had no shreds of character of its own? And is there anything in nature which, so to speak, is pure character, although devoid of distinctive character, wholly bereft of power, and incapable even of indicating that it has *some* peculiar properties and effects of its own? Surely there is irony in the thought that this grotesque resurrection should follow the obsequies of epiphenomenalism so promptly and so confidently—irony and something more.

I should like to call attention, too, to another remarkable circumstance in the present affair, and I shall try to elucidate it by referring again to Dr. Jones. *À propos* of Freud's 'metapsychology,' this author, after referring to Freud's 'convincing logic' in support of the unconscious, proceeds to say that Freud also raises 'the difficult question of the precise difference between an unconscious idea and a conscious one, and what happens when the former is converted into the latter'.¹ What puzzles me is the state of mind of anyone who does not see that this 'difficult' question is the same question precisely as the easy one. An 'unconscious' that has not made up its mind about the 'difficult' question is simply a pattern in ink, and our problem, as I understand it, is, quite precisely, whether any sort of intelligible answer could be given to this single question—whether it be easy or whether it be difficult.

Some of the difficulties in the case, I think, may be easily exaggerated. One might try to score a debating point, for example, by pointing out that although the *similarity* between the conscious and the unconscious is the burden of these definitions, the *difference* between the two is commonly taken to be the most important result of the New Research. This apparent contradiction, however, is less formidable than

¹ *British Journal of Psychology* (Medical Section) Vol. i., Pt. i., p. 65.

it seems. It is only opposites of the same kind that can, properly speaking, be contrasted. We contrast red with green, not with the multiplication table. And although the point needs clearing up, especially in view of the numerous psycho-analytic 'explanations' which make the unconscious, reputed a-logical, behave (on occasion) in a thoroughly reasonable manner, it need not involve a flat contradiction.

Again, there is no demonstrable contradiction in the general term 'unconscious mind' if this term means simply 'that in the mind which is *de facto* unconscious'. No doubt it is easy to manufacture hopeless difficulties of this kind (as Mr. Aveling does when he says that the unconscious must be 'mental or "conscious"'), but usually, when we speak of a mind, we ascribe dispositions, tendencies, potentialities, and capacities to it. These are dangerous terms, to be sure, but they are not unmeaning, and the facts they purport to describe are seldom, if ever, conscious facts. On the other hand, the New Unconscious, so far as I can see, has neither elucidated these conceptions, nor added to them on any point of principle. The New Psychology, we may concede, has shown that we have many tendencies which were hitherto unsuspected or ignored, and that many of our dispositions have sinuous, sinister, and surprising effects. But this is another story, however important it may be. The results of the new psychology would neither be altered nor gainsaid if the new unconscious were in fact physiological, or even if consciousness itself were ultimately a quality that our nerves can sometimes assume.

In saying that terms like capacities or dispositions are not unmeaning, I do not wish to assert that they are indispensable from every point of view. If, for example, the concept of 'mnemonic causation' could be accepted and it were agreed that a *remote* event might be the *immediate* antecedent of a present process, much that is plausible in these concepts would cease to be so. The need for 'traces' would disappear, and the ripening and developing of these dispositions would be the only circumstance that required attention. In view of what we learn about time from modern physics it would be rash to flout this possibility; but if we assume, with common sense, that an idea which has been followed by other ideas cannot have any direct influence after the interim, we are forced to assume some sort of continuing disposition in order to bridge the gap. On the other hand, we simply do not know what this disposition is either in ordinary 'foreconscious' memory or, let us say, in Dr. Rivers's case of claustrophobia, any more than we can say what the

knavery of a sleeping rascal actually is. All that we know is that the rascal would be a slippery customer under other circumstances.

It follows, however, that we may speak, thoroughly intelligibly (although barbarously), of unconscious 'trends' and 'impulsions' and 'urges' as well as of unconscious 'complexes' of these; for these terms mean only that there is something persistent but unknown which is capable, with or without internal development and rearrangement, of forming a specific bond of connexion between certain vanished ideas and emotions on the one hand, and, on the other hand, certain *other* ideas and emotions which appear after an interim. It may very well happen, however, that there is *no* intelligible meaning in speaking of unconscious wishes, or desires, or memories, or expectations, or intentions, or emotions, or resolves, or ideas, and I wish to consider this question in somewhat greater detail.

The theories of the Behaviourists—whom I take to be the Newest Psychologists—have shown us, no doubt, that a certain meaning (perhaps even a certain precision) can be attached to these terms provided we admit that there is no such thing as consciousness. This, however, is precisely what many of us cannot admit at all. We recognise, of course, that our consciousness is intimately allied with bodily reactions, and perhaps that it could not arise without an affector beginning, or persist without an effector continuation; but we do not and cannot admit that the *only* difference between being awake and being anaesthetised is a difference in bodily reactions, or that human happiness or human misery would be worth a moment's consideration unless they were, most emphatically, conscious happiness and conscious misery. If this be so—if consciousness and unconsciousness are, quite certainly, not the same—it is quite impossible, I think, to qualify any of the terms I have mentioned by the adjective 'unconscious' without stultifying ourselves completely; and Behaviourism does not help us in this particular.

On the other hand, there are certain distinctions within consciousness which may seem to throw light on the problem, and these require most careful scrutiny. The chief of them, I think, are the distinctions between reflective self-consciousness and consciousness *simpliciter*, between consciousness which is connected and consciousness which is dispersed, between focal and marginal consciousness, and between schematic and detailed consciousness. I shall examine these distinctions, then, in this order.

(1) There is an idea abroad, often left unchallenged, that a

man is conscious only of that which he avows to himself upon reflexion. This idea seems to me simply false. For the most part, it is true, we have a general, unexamined, uninterrogated notion of the way our thoughts are drifting, but self-conscious avowal or reflective self-questioning is the exception and not the rule. It is beside the point, therefore, to urge that a man may do shady things without admitting to himself that they are shady.¹ Of course he may, but it does not follow that these actions were unconscious. All that follows is that the man did not consider or did not notice some of their moral aspects. Unselfconscious thinking, similarly, may and does occur; but it is *unconscious* consciousness, not *unself-conscious* consciousness, that is the trouble. This distinction, consequently, does not seem to help us.

(2) Each of us knows, from the plainest experience, that the course of his thoughts is sometimes tense and concentrated, sometimes rambling, ambling and dispersed. The player's wits are fiercely preoccupied; the spectator's thoughts may go wool-gathering or building castles in Spain; and drugs like scopolamine (or mere sleepy-headedness for that matter) turn all our ideas into bemused stragglers. This, however, is no proof that the stragglers are unconscious. It proves only that they are out of the ranks; and if the stragglers, as in the Beauchamp case, sometimes mass themselves into loosely organised bands of their own, this, in itself, need not affect the general principle.

No doubt, if we could show, as the new psychology has gone a long way towards showing, that there are *some* definite laws for the stragglers' wanderings, our results would be very important, but they need not affect the question before us. To say that dispersed ideas are 'split off' is only to say that our thoughts are disconnected. In this sense, and in this sense only, ideas may be 'split off' into groups, blind for the time being to one another's existence (as in 'alternating personalities' and the like), and, of course, there is no logical contradiction in supposing an infinity of co-conscious trains of ideas connected with every living body, just as there is no contradiction in supposing an infinity of invisible auras round every human head, or an infinity of guardian angels sustaining and controlling every human life. These suggestions, however, leave the problem of the 'unconscious' precisely where it was. The difficulty about co-consciousness is not that it is unthinkable but that the evidence for it is lacking. We are told that it is there, and when we go into the ques-

¹ Cf. Russell, *The Analysis of Mind*, p. 32.

tion, we find that only *one* consciousness is in the house at any given time, and that the other must be supposed to be concealed somewhere in the neighbourhood. It will come if you 'tap,' if you open its coffin, if you make the proper mesmeric passes. Meanwhile, however, it is *not* there (although you think it is doing something) and when it is there you may look in vain for the *other* housemate.¹

This way of speaking, to be sure, would be quite legitimate if we were dealing with things like Mr. Aveling's bullet which remain the same whether they are present to our experience or not. The trouble about ideas, and wishes, and the like, however, is precisely that they do not seem to be anything at all, *except* when they are present conscious facts. A dead body is at least a corpse, but a vanished idea is simply nothing. It was and is not, just as that glorious putt which you made last year was and is not. To be sure, this putt of blessed memory had important after effects. You have never been the same man since; but you need not suppose, surely, that you have been putting ever since, in your bed and at your meals, or, if not putting, then *quasi*-putting, or putting 'minimally,' in a word unputtingly. And although you may say that you often miss your putts because of the co-putting that is going on inside you, you need not expect to convince everyone that you are either 'scientific' or 'empirical' when you say such things. Instead of that you are a 'metaphysician' of the baser sort, for you are trafficking in occult verbiage.

Therefore, I do not think that this distinction between concentrated and dispersed proves what it is supposed to prove.

(3) The distinction between the 'centre' and the 'margin' of 'consciousness' is a matter of empirical observation, and any psychologist who neglects the margin does so without excuse. What is more, the outskirts of this fringe are undoubtedly nebulous and impalpable. It is probable, therefore, that the margin reaches further than we commonly think, and certain that we cannot usually tell precisely where

¹ A certain type of co-consciousness, no doubt, is quite familiar in ordinary experience, *e.g.*, when, brushing my coat, I look out for a tramway car and converse with a friend the while. There is sufficient evidence, too, of a certain exaggeration of facts of this kind, in some of Janet's hysterical patients. This, however, does not seem to me to affect the principle of what I have said, and Dr. Prince's specific attempt to prove literal co-consciousness (*i.e.*, two *completely* distinct mental series, connected with the same body, *both* of which are actually conscious at precisely the same moment) seems to me to be inconclusive. (See *The Dissociation of a Personality*, pp. 321-322.)

it stops. This circumstance, however, carries us but a very short way. If we cannot discern where precisely our vision ends, we do not conclude, on this account, that we can see with the back of our heads. Indeed we know, in this case, that the margin does not extend very far. Similarly we recognise, in this case, that there is a perfectly definite and inescapable difference between the things that are about to be seen, or that we may readily see, and the things that we actually do see, marginally or otherwise. I do not wish to argue that the penumbra of visual consciousness is precisely similar in all relevant respects to all other conscious penumbrae, but I see no reason for supposing any profound difference in principle, and until some such reason is shown I shall continue to believe that (although there may be limited debatable regions) in general we have quite sufficient reasons for asserting the absence of consciousness as well as for asserting its presence, that we have no reason whatever for using the 'margin' as a dumping ground for anything which our theories may happen to find convenient, and that, in so far as the 'fore-conscious' simply describes things which we may readily call to mind, it need not be marginal at all.

(4) The terms 'marginal' and 'schematic' are not equivalent (although the margin is schematic and not detailed), because the *whole* of my consciousness, both centre and fringe, may be vague and schematic. Cases of this sort abound. The novel which as yet is but dimly foreshadowed in the intense inane, the *mot juste* which seems so near to us and is yet so hard to attain, the oration which, before it is made, is only a sort of dim glow in our souls—these and similar experiences offer unmistakable instances; and it is easy to misinterpret them. No one seriously believes, I fancy, that my schematic notion, say, of the *Vedanta*, actually contains the *Vedanta*, implicitly or otherwise. Even to suppose so would be to suppose nonsense. The *Vedanta* is not 'buried' in this grave; but many seem to suppose that if my schema of a novel turns into a novel, or my schema of an oration turns into an oration, then, somehow or other, the novel or the oration was unconsciously present in the schema all the time; and if the schema seems to hover over something momentarily forgotten but familiar to the feeling, nearly everyone speaks of buried and familiar ideas struggling to see the light of conscious day.

In my view, the schema of the familiar forgotten thing no more contains the familiar forgotten thing, buried and struggling, than my schema of the *Vedanta* contains the

Vedanta, buried and struggling. The schema of my oration, so carefully planned beforehand, guides me as I speak; it feels familiar, perhaps, and even satisfactory; it feels different from other schemata of other orations; but it is not the oration itself and it does not contain the oration. There is no oration until I give it, no idea until I think one, no expression until the expression comes. The schema (which we may suppose, for simplicity's sake, to be the whole fact of consciousness when I begin my oration), may prompt me continuously as I go on to explain myself in detail, and the oration may be a logical or associative development from this schematic nucleus; but this is no proof, or even the beginnings of a proof, that these subsequent ideas or expressions literally possessed a previous existence of any kind. A schematic idea is just a vague glimpse, and a vague glimpse does not embrace details, metaphorically or otherwise.

These contrasts within consciousness, therefore, neither compel us to admit the 'unconscious' (or a 'buried' and 'concealed' consciousness) nor elucidate the manner in which an idea, or wish, or intention could be unconscious and still be itself; and I do not think that more helpful suggestions than these ones are to be found. In particular, Mr. Aveling's suggestion that feelings or emotions may persist a-cognitively seems to me quite useless and forlorn. It is simply a mistake, I think, to use 'consciousness' and 'cognition' as convertible terms, or to suppose that the tripartite division is a division of anything except conscious states; and the best psychologists deny the existence of blind strivings or sightless feelings. These phrases, it is true, may describe *something* but they do not describe conation or feeling-tone.

What I have been saying, I think, is not at all 'metaphysical'. It might be better if it were, but it is not; and the point which I wish to make in conclusion, while it traverses Mr. Aveling's definitions of 'psychology,' implies nothing more recondite than common sense. In speaking of 'consciousness' and its 'margin' and so forth, I have been using current phrases which are plainly elliptical; and my argument has lost something of clearness on this account. Strictly speaking, of course, the 'margin of my consciousness' is the 'margin of the field of which I am conscious'; and so in other cases. What I remember, for example, is a past event of which I am at present conscious; what I expect is a future event which I believe to be about to occur; and what I call an 'idea' describes a complex state of affairs in which a conscious process on my part—an event in my psychological history—is cognitively related to some other event which may have occurred or may be about to occur at

an earlier or at a later date than this conscious process of mine, and which may or may not be part of my own life-history.

Plainly, then, the problem of memory is not how a *past* event has persisted or what a future event is *now*, but how I can look back at a past event or (in any way) look forward to a future one. This 'looking,' it is clear, is not past looking or future looking, but looking *at* the past or looking *at* the future. It occurs just when it does occur. It is a flash which does not persist, although, as is usual in the case of flashes, a similar flash may recur. The past event to which we return in memory, on the other hand, is over and done with when we look back at it; and it remains over and done with however frequently we look back at it.

Now the process of looking, whether forwards or backwards or under our noses, is a passing event and logically similar to any other passing event (say the passing event of walking or jumping), and although these events have consequences for our subsequent history, it is nonsense to say that *they* persist. We learn to walk by walking and to jump by jumping, but no one supposes, on this account, that invisible processes of unwalking walking and of unjumping jumping, and of every other action that we learn to perform, must continue without a moment's intermission in order to account for the fact of learning; or that the people who learn to 'skate in summer' spend the whole of the cricket season practising a 'buried' course of unpatinating patinations. Whatever goes on, it is not this, and I should be sorry for the physiologist who did not try to find out what really does go on. The psychologist, no doubt, has a harder task, and he has a much better excuse for taking refuge in metaphors, but he ought not to take metaphors literally, whatever the provocation; and although the use of these metaphors may not seriously affect a great many of his enquiries, there is an ugly look about them even when they seem to be harmless. So far as I can see, unconscious consciousness is in precisely the same position, logically, as unthinking thinking, or unwalking walking, and we have no more right to say that wishes or ideas are unconscious, or that 'something of the same nature' is unconscious, or that 'something similar in all respects except in the respect of being conscious' is unconscious than we have for asserting that walking goes on when we do not walk, or that 'something of the same nature' goes on, or that 'something goes on which is identical with walking in all respects except in being pedestrian'.

It is worth our while, I think, to remember this.

III.—ARE HISTORY AND SCIENCE DIFFERENT KINDS OF KNOWLEDGE? ¹

A SYMPOSIUM BY R. G. COLLINGWOOD, A. E. TAYLOR,
AND F. C. S. SCHILLER.

I. BY R. G. COLLINGWOOD.

FROM the point of view of the theory of knowledge or logic, must a distinction be drawn between two kinds of knowledge called respectively History and Science?

Such a distinction is usually made: we shall argue that it is illusory. It is implicit ² in the whole drift of the Platonic philosophy, though Plato nowhere, I think, states it clearly. But Aristotle not only states it, but states it in a way which, though only incidental, implies that it is familiar. In a well-known passage of the *Poetics* he remarks that poetry is more scientific ³ than history, because poetry deals with the universal, for instance, what a generalised type of man would do on a generalised type of occasion (and this, he implies, as *knowledge of the universal*, is science), whereas history deals with particular facts such as what, on a particular occasion, a particular person said. History is thus the *knowledge of the particular*.

I. The distinction between history as knowledge of the particular and science as knowledge of the universal has become common property and is in general accepted without question. We propose to criticise it: and as a preliminary, we shall indicate two difficulties which we shall not follow up.

¹ Contributed to the Joint Session of the Mind Association and the Aristotelian Society at Manchester, July 14th-16th, 1922.

² I would suggest, for instance, that just so far as Mr. H. J. Paton (*Proc. Arist. Soc.*, 1922, pp. 69 *seqq.*) is right in identifying *eikasia* in Plato with art, so far *πίστις* is to be identified with history, as cognition of the actual, but only *γινώμενον*, individual.

³ *φιλοσοφώτερον*. I need hardly remind the reader that what we call science Aristotle regularly calls *φιλοσοφία*, a usage long followed in this country and criticised rather spitefully by Hegel. What we nowadays (having given in to Hegel) call philosophy Aristotle calls *σοφία*, *θεολογία*, or *πρώτη φιλοσοφία*.

(a) It implies a metaphysical distinction between two kinds of entity, a *particular* and a *universal*, such that any cognition may be knowledge of the one in isolation from the other. This dualism is precisely the doctrine which Plato attacked in the *Parmenides* when he pointed out that the universal, thus distinguished from the particular as a separate object, loses just its universality and becomes merely another particular. The mediaeval nominalists attacked it again, in the form in which the realists held it: and Berkeley once more attacked it in the doctrine of abstract ideas. Any one of these three arguments could be directed with disastrous effect on the metaphysical groundwork of the distinction between history and science: but we shall not undertake this task because the arguments in question are purely destructive, and like all destructive arguments would be waved aside as mere examples of the 'difficulties' which seem only to stimulate the faith of the believer.

(b) We might drop metaphysics and appeal to experience, which clearly enough shows the instability of such a dualism. Wherever people have distinguished science and history as different kinds of knowledge they have tended to degrade one into the position of a pseudo-knowledge and to erect the other into the only real knowledge.

(i) In Greek thought science or knowledge of the universal is real knowledge and history or knowledge of the particular is only half-knowledge. For Plato the particular is midway between being and not-being, and therefore our best possible cognitions of it are midway between knowledge and ignorance. They are not knowledge: they are mere opinion. For Aristotle the qualification of poetry as more scientific than history implies that poetry (and therefore *a fortiori* science) comes nearer to satisfying the ideal of knowledge than history does. This position became traditional, and crops out in a curious way in the nineteenth century. It was common in that period to propose that history should be elevated to the rank of a science: which meant that it had hitherto not been a science because it only recognised the particular, but that now this reproach was to be removed, and after a long apprenticeship spent in the proper Baconian way in collecting facts history was to be promoted to the task of framing general laws, and thereby converted into a science fit to take its place among the other sciences like chemistry and mechanics. This proposal, to redeem history from its degraded infra-scientific position, became part of the regular programme of nineteenth-century empiricism and positivism, and the science into which it was to be converted

was variously entitled Anthropology, Economics, Political or Social Science, the Philosophy of History, and Sociology.

(ii) The opposite tendency has been late in appearing, but it has made amends for its lateness. The chief feature of European philosophy in the last generation has been that movement of reaction from nineteenth-century positivism which has tended to degrade science into a false form of knowledge and to find the true form in history. The metaphysical notion of reality as process, movement, change, or becoming has had its reverse (perhaps really its obverse) side in an epistemology which places history at the centre of knowledge. In this, implicitly if not explicitly, the schools of Mach, of Bergson, of James, and of Croce agree: and even more plainly they agree in holding that science is not knowledge at all but action, not true but useful, an object of discussion not to epistemology but to ethics. Any cognition (such seems to be the Berkeleian principle common to these schools) must be of the particular, and must therefore be history: what is called a cognition of the universal cannot be a cognition at all but must be an action. They do not all intend by this analysis to 'degrade' science in the sense of denying its *value*: for it is, they maintain, *useful*: what they deny is simply its truth.

Experience shows the difficulty of keeping the balance even and the temptation to identify the genus knowledge with one of its species, thereby reducing the other to the position of an expedient towards knowledge or an inferior kind of knowledge. But no one who really wishes to maintain the dualism will let this deter him. Grant that every one from Plato to Croce has failed to maintain it, *he* will not fail but will stand by the very simple doctrine that knowledge is a genus with two species: knowledge of the particular, history, and knowledge of the universal, science. This simple faith in the possibility of maintaining a dualism by sheer will-power, undeterred by the spectacle of the bleaching bones of previous adventurers, is left untouched by the expressions of a disillusioned scepticism. We shall not pursue this line of criticism, but shall try simply to describe how the scientist and the historian work, in order to see whether we can detect a fundamental difference between them.

II. It is commonly assumed that what the scientist does, in virtue of which he is a scientist, is to generalise. Everything else which he may do, it is thought, is (in so far as he is a scientist) a means to this end. When it is achieved his work is done and there is nothing more for him to do except to go on and frame a new generalisation. That is the

meaning of the common saying that science is the knowledge of the universal. Is it true?

As a common opinion it may be countered with another. Generalisations can be learnt by hearsay or reading: for instance, you may learn by heart the list of fossils characteristic of a certain horizon by simply getting them up from a book. Now common opinion holds that a man may be book-learned in a science and yet incompetent in it. A geologist may know the names of fossils, but if we find on putting him down in front of an actual landscape or in an actual quarry that he cannot give us a geological account of this particular object, we say that he is an impostor. He can repeat, it may be, all the generalisations which (we generally think) constitute the *corpus* of geological science, but if he cannot apply them he is no geologist.

Friends and enemies of the natural sciences agree in thinking the *application* of generalisations to be characteristic of them, and so it is, but not in quite the way that is generally thought. 'Science' is praised or despised for its practical or economic value, and the geologist is respected or scorned for being able to tell us where to look for coal. It is implied that geology means not merely knowing generalities but interpreting particular facts in the light of these generalities: being able to say 'my geological learning leads me to believe that there is coal just below this sandstone'. And it is implied that the person who says this is more entitled to the name of geologist than one who just reels off general statements.

The common view of science as essentially useful or utilitarian is not wholly erroneous; it conceals an important truth, namely that a scientist is only a scientist *ἐπεργεία* when he is interpreting concrete facts in the light of his general concepts, and that the framing of these concepts, if regarded as something distinct from the application of them, is not the end of science but the means. The geologist *ἐπεργεία* is the man who is occupied not in repeating, nor even in inferring, generalised truths, but in looking at country with a geologist's eye, understanding it geologically as he looks at it, or 'applying' his geological concepts to the interpretation of what he sees. To possess these concepts without so applying them is not (as the view which identifies science with generalisation would imply) to be an actual geologist, but only at most to be a potential geologist, to possess the tools of a geologist without using them. But we are here in danger of a serious mistake. The potential geologist is only a mythological abstraction: he cannot really exist: for where

the 'tool' is a concept and the 'use' of it is the interpretation of individual fact by its means, the tool cannot be possessed in idleness. That would be to strain the metaphor. Interpretation is not the employment of a previously-constructed tool (concept) upon a separately-given material (fact): neither the concept nor the fact is 'possessed' (*thought* and *observed* respectively) except in the presence of the other. To possess or think a concept is to interpret a fact in terms of it: to possess or observe a fact is to interpret it in terms of a concept.

Science is this interpretation. To live the life of a scientist consists in the understanding of the world around one in terms of one's science. To be a geologist is to look at landscape geologically: to be a physiologist is to look at organisms physiologically, and so on. The object which the scientist cognises is not 'a universal,' but always particular fact, a fact which but for the existence of his generalising activity would be blank meaningless sense-data. His activity as a scientist may be described alternatively as the *understanding* of sense-data by concepts, or the *realising* of concepts in sensation, 'intuiting' his thoughts or 'thinking out' his intuitions. In this process he recognises the objects before him as being of this or that kind: and sometimes this recognition results in the discovery that they are economically valuable, that is, it serves as a basis for action. That is the truth which underlies the idea of science as essentially utilitarian: but if we are to use technicalities we shall say that utility is not its *essence* but its *accident*, or at most its *property*, since ability to use one's world perhaps follows necessarily from understanding it. And every science has the same character: not only geology and physiology but even what we are accustomed to consider the most abstract sciences. Thus, to be a chemist consists not in knowing general formulæ but in interpreting particular changes which we observe taking place by means of these formulæ: the science of mechanics consists in the similar interpretation of observed motions: even mathematics does not consist of abstract equations and formulæ but in the application of these to the interpretation of our own mathematical operations.

A distinction is often made between the particular and the individual, the former as a mere abstraction, the latter as the concrete fact, synthesis of two opposite abstractions, the particular and the universal. If we must conform to this usage we shall put our contention by saying that there is no such thing as knowledge either of the particular or of the universal, but only of the individual: and that the

sense-datum (pure particular) and concept (pure universal) are false abstractions when taken separately which yet, as elements in the one concrete object of knowledge, the individual interpreted fact, are capable of being analytically distinguished. This may be illustrated by the fallacy of inductive logic. The inductive logician assumes that the task of science is to generalise, to frame universal laws; and that its starting-point is the facts of ordinary observation. The problem of inductive logic then is how, from the particular facts, do we reach the universal law? It tries to describe this process in detail: but when it has done so one cannot help seeing that the alleged particular from which it started was never a pure particular but was already steeped in generality. The process ought to have begun with the pure uninterpreted sense-datum. It never does so begin in the descriptions of inductive logicians, for two excellent reasons: such a pure sense-datum does not exist except as an abstraction and therefore cannot be the concrete starting-point of a process, and if it did exist one could never get beyond it to reach the universal. So the inductive logician makes the process begin with the carefully staged experiment or intelligently recorded observation, which is not a *particular* at all but an *individual*, a concrete fact bristling with conceptual interpretations; and from this point, which already contains and presupposes the concept, he proceeds to 'induce' the concept he has surreptitiously presupposed. How, after this, he has the face to accuse syllogistic logic of *petitio principii* remains a mystery.

The scientist's aim is, then, not to 'know the universal' but to know the individual, to interpret intuitions by concepts or to realise concepts in intuitions. The reason why it has so often been fancied that his aim is to form generalisations is probably that we expect science to be contained in textbooks, much as we expect art to be contained in pictures. Art is to be found not in pictures but in our activity which has pictures for its object: and science is to be found in our activity which uses scientific textbooks, not in the textbooks themselves. The teacher who puts a textbook into the hands of a student must be understood as saying: 'I give you not science, but the key to science: the information here printed is not science, it is something which when you find out how to use it will help you to build up in your own mind an activity which alone is itself science'. It is only because this is so obvious and so continually goes without saying that we habitually overlook it.

III. The scientist generalises, certainly: but generalisation

is subordinate to his real work as a scientist, the interpretation of individual fact. But the historian does not remain at a level of thought below generalisation: he generalises too and with exactly the same kind of purpose. Such generalisations as charters, mediæval scripts, types of handwriting characteristic of the early fourteenth century, guild institutions, and so forth, go to the interpretation of a scrap of parchment which fits into its place as a link in the history of a town precisely as fossils, Jurassic fauna, shells peculiar to the Portland beds, and so on, are the concepts through which a geologist works out the geological history of a valley. Of late, the historian's concepts have tended increasingly to group themselves into what seem to be independent sciences, palæography, numismatics, archæology and so forth. If, as is mostly the case, they do their work better for being thus incorporated into chartered societies, well and good. But their work is the interpretation of individual fact, the reconstruction of historical narrative: and there is a certain danger that the archæologist, under the influence of the false theory of science which we have criticised, may forget this. He may even think that poor old history has been quite superseded by his own science and others like it, whose aim is not to individualise but to generalise: to reach conclusions not in the form 'we can now assert that Agricola built this fort' but in the form 'we can now assert that Samian bowls of shape 29 went out of use about A.D. 80'. The latter is certainly the form in which the conclusions of many valuable monographs appear: but that is just because the monograph as a whole is only an incident in the scientific lives of its writer and readers, an incident whose importance lies in its bearing on the interpretation of individual facts. Monographs are not archæology: or if they are, then archæology is a false abstraction and we must say monographs are not history, since history is the concrete activity which produces and uses them.

The nineteenth-century positivists were right in thinking that history could and would become more scientific. It did, partly as a result of their work, become at once more critical and trustworthy, and also more interested in general concepts. But its interest in general concepts, reflected in the rise of archæology and such sciences, was the interest of a workman in the improvement of his tools. History did not subordinate the determination of facts to the framing of general laws based on them; that idea was part and parcel of the inductive fallacy. It created within itself new bodies of generalised thought subordinated to its own

supreme end, the determination or interpretation of individual fact.

IV. The analysis of science in epistemological terms is thus identical with the analysis of history, and the distinction between them as separate kinds of knowledge is an illusion. The reason for this illusion is to be sought in the history of thought. The ancients developed a very much higher type of scientific than of historical thought: such sciences as mathematics, physics, logic, astronomy, etc., in the hands of the Greeks attained a pitch of excellence which history did not rival till the seventeenth century. Their philosophical reflexions were therefore concentrated on scientific thought and not on the less remarkable achievements of history: and from that time till the nineteenth century a lack of balance between the epistemology of science and that of history continued to exist. The result was that in the theory of science attention has always been drawn to the concepts or principles of interpretation according to which the active work of thought proceeds, while the theory of history has contented itself with attending to the finished product of thought, the fully-compiled historical narrative. This is the root of all the alleged differences between history and science. Thus it has been said that science predicts, whereas history only records the past. That is untrue (geology records the past, history predicts that green-glaze pottery will be found in a mediæval ruin) except in the sense that what we arbitrarily call history—the finished narrative when the historian has stopped working on it—is complete and immovable, while what we arbitrarily call science (the mere abstract generalisation) is an early stage in the process of thought which looks forward to its own completion in what inductive logic calls verification.

Again, it is said that the mainspring of science is critical thought, that of history authority. That again is wholly untrue unless we are speaking of *incipient* science and *completed* history: for every kind of work is critical so long as the conclusion is not yet reached, and every kind dogmatic when it is. A working historian is critical in all the same ways as a working scientist, and a scientist who has come to a conclusion states it, everybody knows, as dogmatically as a Pope: it would be a pedantic and insincere affectation if he did not.

These and other fancied distinctions are the result of comparing an inside view of science with an outside view of history—science as an actual process of thought with history as a dead, finished article. When both are regarded as

actual inquiries, the difference of method and of logic wholly disappears. The traditional distinction, we have suggested, has its origin in a simple historical fact, the fact that science became an object of philosophical reflexion long before history: not in any epistemological dualism. To erect such a dualism is to falsify both science and history by mutilating each of one essential element of knowledge—the element of generalisation or the element of individualisation: and so mutilated, it is not surprising if now history, now science, should appear an illegitimate form of knowledge.

II. BY A. E. TAYLOR.

My belief is that they are different, and I am now to give a brief statement of my reasons for thinking so. I say my reasons and no one else's, because I do not see that a discussion of the kind we are now engaged in is likely to be profitable if it resolves itself into an attempt to count heads and to make out, largely by doubtful argumentation, that Plato or St. Thomas or Hegel has taken sides and Rome has therefore spoken and there is nothing left to discuss.

The view I believe to be false in principle can perhaps be most readily indicated, and the reasons for thinking it false most briefly suggested, by stating it in what will perhaps be thought an exaggerated form, though, if the view were only true instead of false, I do not see that such a statement would be anything but perfectly appropriate. Spinoza, we all know, undertook to write *Ethica more geometrico demonstrata*, though most of his readers have held that the promise was not really redeemed by the performance. How if Gibbon had promised the world, or if some enthusiast for the opinions of the late Sir John Seeley were yet to promise an *Historia Imperii more geometrico demonstrata*? Should we, or should we not, expect to find that in proportion as the work was good history, the "geometrical method" *eo praefergebat quia aberat*? I believe we should, and I want to show very succinctly why I believe we should be right.

The root of the difficulty does not lie, as is often said, in the distinction that "science" deals with the "universal" but history with the "individual". This is, no doubt, true, but if it were all, a clever disputer could make out a plausible case for neglecting the distinction by arguing that the universal truths of science hold true of individual cases, and that the individuals whose doings form the subject of history

are only known to us as objects with this or that complex of "universal" attributes. The real difficulty is rather that science, when it is "pure," that is when you have freed it from complication with any extraneous preoccupations, when it is all through "science" and nothing but "science," never affirms and never attempts to affirm anything but a formal logical implication between a proposition which it calls a demonstrated conclusion and a group of other propositions which it calls the premisses for the conclusion; history, when it is pure history, freed, to repeat myself, from all preoccupation with the extraneous, always tries at least to affirm the truth of a categorical proposition. Thus, to take a pair of illustrative examples, it is no concern of purely scientific science whether or not the famous Pythagorean proposition is true. The scientific work is done when it has been shown that a certain small group of postulates, all explicitly asserted or tacitly assumed without proof by Euclid, imply as a logical consequence the theorem of Pythagoras, and that if any member of this group of postulates were omitted there would be no such implication. Whether these various postulates are themselves true or not is not a problem for the geometer as such. He may, so far as I can see, hold that they are true, that, as it is quaintly put, the "space in which we actually live" is "Euclidean"; he may hold that some of them are not true, that we "live in a non-Euclidean space"; he may hold that one or other of these views is true but that we cannot tell which; or finally, as it seems to me—and I could quote names, if necessary, to prove that this is not merely a view of an "outsider" in geometry—he may think that the problem itself is on the same level as the question whether the body we call Jupiter really is Jupiter, or whether the true reckoning of money is by pounds and shillings, by francs or by dollars. Our view of his common sense may be affected by his verdict on this issue, but not our view of his competence as a geometer. Or again, if you start with certain very simple postulates about the type of structure of the integer-series, you can, as Frege has shown more elaborately than anyone else, deduce the whole system of rules which make up simple Arithmetic, but it may remain in doubt all through, as Frege left it in doubt, whether there really is anything which answers to the notion of an integer as defined by your initial postulates. Only the doubt does not in the least affect what you have really asserted, *viz.*, that if your two or three initial assumptions are granted, the whole bulk of your conclusions follow with strict logical necessity. You would show yourself a bad "arithmetician" if you de-

clared a consequence to follow when it does not follow. You do not show yourself a bad arithmetician because it may be doubtful whether one of your postulates is true. All that is really demanded in regard to them is that they shall be as few and simple as possible, and that each of them shall be independent of all the others, *i.e.*, that the consequences alleged to follow shall not *all* follow if any one of the postulates is expunged from the list. Your crew must be sufficient to row your boat, and it must contain no "corkers".

For the sake of contrast, take any proposition about history you please, the simpler and more childish the better for my purpose, *e.g.*, "Richard III. murdered the sons of Edward IV. in the Tower," "William III. was an accessory to the Rye House Plot". The main point of interest here to the historian of our country is whether these allegations are themselves true or not. If the princes were still alive when Henry VII. reached London, or if "Hooknose" knew nothing about the Rye House Plot until the arrest of the real or alleged plotters, these statements are simply false history. The existence of a logical implication between the premisses and the conclusions based on them is here only interesting in a secondary way for its bearing on the truth of the conclusions themselves. In point of fact, the historian only rarely, if ever, really succeeds in putting the logical implication beyond all doubt. In our own example, the first proposition is one which most historians have accepted, the second one which they have rejected. Yet the kind of evidence produced to establish the connexion of premisses with conclusion appears to be about as good in one case as in the other; in both, as a matter of logic, alternative readings of the facts are really left open.

It is not to the point to argue against this real distinction by urging that the individual persons and events of history have universal characters and that it is these characters which make up what we really know about them. The question is what it is we are interested in establishing and what we think it our business to establish in history. We are emphatically not interested, when we write the history of Richard III., to make out the proposition that a politician with the character we believe King Richard to have had is very likely to put rivals whose pretensions may be a source of difficulty and danger out of the way if he has them in his power. We may grant this implication quite freely, and yet, if some one were to produce undeniable evidence of the existence of the two princes after the battle of Bosworth, though the evidence might not lead us to make any alteration

in our hypothetical estimate of Richard's character, and so would leave the general implication still standing, we should certainly feel that we were in the presence of a new historical fact, and we should feel called on to rewrite history accordingly. The plain fact is that what the great representatives of the scientific ideal have always been interested in is viewing things, as one of the greatest wrote, *sub specie quadam aeternitatis*. They are only interested in their temporal character so far as this can be regarded as a clue to their eternal character; they may have to allow, in some cases, for the temporal in their premisses; their aim is to exclude it, if they can, from their conclusions, and this is the real reason for the "hypothetical-deductive" method which all science does its best to follow. But, thank God, all our interest and all our knowledge is not confined to the *species quaedam aeternitatis*; we are also interested in the temporal as temporal, and we can know a great deal about it; even if you decline to call this knowledge science, as I think you ought, it is "information," and it is just because we care about information that there is a substantive study of history. Of course you can make the study merely subservient to that other interest in the non-temporal. You can treat history as merely offering a starting-point for the framing of hypothesis about tendencies in human nature. At its best, however, the result of that kind of study is not history but "Politics," the study of the legislator and statesman; at its worst, it becomes the medley of crude guesses which has dignified itself appropriately enough by the vulgar and hybrid appellation of "sociology," an unlovely *simia Politicae*. But Politics and sociology are both discriminated from true science by the multitude of their unproved postulates, the vagueness of them, and the total neglect of any care to insure that the postulates shall be sufficient and shall be independent of one another. The historian's aim is at bottom quite different from that of the student of Politics or sociology. They are concerned with the "moral" of the fable; the true historian only cares for the "moral" in a wholly secondary way. He knows that the moralising tendency is so widely diffused that men will read his narrative, as too many of them continue to read *Hamlet* or *Don Quixote*, for the sake of the "moral" to be got out of it, and he must prefer that the "moral," since moral there is to be, should be one in conformity with the actual facts and not otherwise. But his real interest is with the story, a story of the deeds of individual men or individual societies which he does not expect to recur and does not, at least in his quality of historian,

regard as "cases" or "instances" of a law of tendency. They may very well be that, but it is not because they are that that he takes so deep an interest in their story. One might, for example, be interested in the History of the Roman Empire simply as a striking case in point to show how what is at bottom a military usurpation, under a constitutional mask, comes to show itself in its true character in spite of the ablest attempts of the most intelligent of the wielders of the usurped power to "save appearances" and to hide away even from themselves the true "secret of empire"; how the ultimate break-down of this attempt, aided by the over-greatness of the burden to be borne and the tendency of new social strata to work to the surface and of new blood to find its way into the boundaries of the "civilised" state, leads in the end to the dissolution of the institution itself. But it is plain as the day that this was not the chief interest which the tale of the *Decline and Fall of the Roman Empire* had for our great historian of it. To him the great interest of the Empire was that its history and its institutions were the source of so much in the life and institutions of the society in which he lived. From the point of view of a pure sociologist, the interest of the Roman Empire and its fortunes should be quite independent of the "empirical" fact that its historian lived in the Europe of the eighteenth century and not in the moon, and that he was the heir of the Græco-Roman tradition of life. To Gibbon these "temporal" facts made nine-tenths of the interest of his subject. And so it must always be with all of us. *Sub specie æternitatis*, and as material for the sociologist's queries, the past of China or Japan may be as important as that of France or England; for us who are Frenchmen or Englishmen it cannot possibly be so. Just so, though for God the life of any man may have as much interest as that of Dante or Chatham or Knox, it cannot be and ought not to be the same with us who are the heritors of what they did, wisely or amiss. It is no answer to repeat the old story that whether we are contemplating *sub specie æternitatis* or *sub specie temporis* that which we contemplate is in either case the same thing, that every universal is also particular and every particular universal. Even if this were true, as I, for my part, do not believe that it is, the observation would be irrelevant. It would still be one thing to study the particularity of the universal and another to study the universality of the particular. In a different field of study, it may be true that our real concern with a great philosopher is to discover what he meant to say, and that the words in which he chose to say

it are a secondary matter, but every scholar would subscribe to the statement that it is our business to fix the text, say of Plato, before we proceed to our interpretation and that in fixing the text our immediate concern is not with what we rightly or wrongly suppose to be the "Platonic philosophy," but with the MSS. and the ancient *testimonia*. In history the point is even clearer for the reason I have just given. Just as we are interested in our own relatives and friends and enemies, not primarily as "social types" illustrative of psychological laws, but because they are *our* relatives or friends or enemies, we are legitimately interested in the same way in the special past to which we owe our own traditions, and in a lesser degree to the past to which other races of men owe their traditions, because it is the past of *ourselves* or of our fellow human sojourners on this particular world of all the worlds God has made. The past of a race living on a satellite of Sirius, if Sirius has satellites, may reasonably be of equal value as illustrating laws of tendency: it would be irrational to hold that it can have the same interest for us.

I have dwelt so long on these obvious considerations mainly because they ought to keep us from introducing false methods of study into history. The point is one which has been made admirably, though without any special reference to the particular problem we are discussing, in Baron von Hügel's wise and tender essay, *Preliminaries to Religious Belief* (*Essays and Addresses on the Philosophy of Religion*, pp. 98-118). The great concern in science is that the postulates which form the *protases* of our statements of logical implication should be as few and simple as the case permits of. (I should say, perhaps, as a caution, that by a "postulate" I mean *any* undemonstrated proposition used as an ultimate premiss in science. I make no assumption that "postulates" may properly be assumed at the dictates of our "volitional nature," *i.e.* because we should like to assume them, still less that the mere making of the "postulate" in any way guarantees its truth. I am using the word in the mathematician's sense, not in that of some "philosophers".) Hence strict science rightly and properly follows the lead of Descartes in insisting that its postulates shall convey "clear and distinct" ideas. But in the actual growth of knowledge, even about our fellow-men, still more about God, as von Hügel rightly insists, we never begin with or rest our knowledge on "clear and distinct ideas". The reality with which we are in contact, when we begin as infants to "know" our nurses and parents, when in any stage of life we have the religious

man's direct sense of touching God, is in its nature so very rich and complex that our "knowledge" of it is bound to be inadequate and dim, the sort of "knowledge," as the same writer says, that a dog has of its master, only still dimmer. Von Hügel is specially concerned with directing this argument against the agnostic in theology who argues that because our supposed knowledge of God is so dim and confused, it is worth nothing, and quite probably it is not knowledge of anything at all. But the same sort of considerations, in a lesser degree, are applicable to the study of human history. Our interest in the men and the ages of the past which has shaped the traditions under which we live is of the same kind, not as our interest in the observations which will confirm or refute a suspected mathematical law or a formula in physics or chemistry, but as an interest in our personal friends and foes.

We want, quite legitimately, to know what manner of men these were; what they really did; whether the benefit or the harm accruing to us from their deeds was foreseen and intended or not, and if not, what it was that they really purposed. This sort of interest is quite unlike that of the strict follower of science; the motive at the bottom of it is quite different from his passion for reducing the course of events to law and formula. A statesman may, to be sure, read the history of the past, mainly to learn from it how to shape his own path among the uncertainties of life, but for that very reason, his interest in history is that of the politician, not that of the historian. At bottom, I take it, we all want to know these things for the very good human reason that we want to feel gratitude where gratitude is deserved and not to bestow it where it would be wasted on the undeserving. And for that reason we properly ask of a great historian something we should never demand from a writer on science, just as we ask the same thing, under easier conditions, from a great novelist. Of the man of science we ask no more than that he should "explain" the course of things to us, make it smooth and easily to be taken in as a whole, by showing how it all follows by logical deduction from a few simple unproved principles taken in conjunction with a comparatively few close observations of actual fact as a "control". If history were what it has often wrongly been taken to be, disguised political theory or even disguised "sociology," we ought to be content to ask no more of the historian. In point of fact we do ask something more and very different.

We expect the really great historian not merely to "explain" events to us but to make us "understand" the doers of historical deeds. He must bring it home to us with conviction

what manner of men they were, who were doing, and what they believed themselves to be doing. Now this is where "science" inevitably falls short. I can illustrate my point most readily by an obvious example. A man may be a thoroughly "scientific" psychologist with all the latest theories and laboratory facts at his fingers' ends, and yet he might be quite incapable of telling a story of human action, even one in which all the events were certified "facts," in such a way as to make us accept the personages of the story as "real"; they might impress us as mere products of the laboratory with labels attached to them, because, as we should probably say, we simply cannot "understand" their proceedings. On the other hand, men who have probably never opened a book about analytic or genetic psychology in their lives can tell a tale of the doings and feelings of quite fictitious characters in a way which makes us feel that we "understand" their personages all through; we can enter into, or as Adam Smith would have said, "go along with" all they say or do. This is why we call the fictitious characters in such men's books "real," and often speak, with some ambiguity, of their creators as profound "psychologists". So they are in a sense, but it is a peculiar sense; Henry James and William James may both be called "psychologists," but not quite in the same sense of the word.

Now I maintain that it is this power of "going along" with the actor in an historical scene and making his readers "go along" with him, which may be wholly wanting in the subtlest analyst of situations or deviser of political theories, that is the supreme gift of the really great historian. And it is not a gift which can be got by any devotion to "scientific method". It has nothing to do with "clear and distinct ideas"; which of us has what the logician would pass as "clear and distinct ideas" of his most intimate friend? The ordinary good Psychology manual will give you much clearer and distinct ideas of the assumed typical man whose mind it proposes to analyse and watch as it grows. But you would be badly at sea if you attempted to read the riddle of a real man's character by dependence on even so admirable a textbook as the *Manual* of my colleague Prof. Stout, as I should imagine he would be the first man to admit.

I do not mean, of course, that a great historian is a brilliant novelist under another name. I should not ask anyone to regard the very brilliant novel called "Froude's History of England" or the hardly less brilliant novel of Macaulay as typical historical masterpieces. The historian works under a control from which the novelist is free. The novelist is at

liberty to "see" his characters first and then shape the course of their doings to correspond to his vision. The historian has to start by "documenting" himself about the complicated web of events and then to divine the actors. It is the same process, on a larger scale and applied to the past, which each of us performs in his way, when he judges the persons among whom his life is cast by what he knows of their words and acts. What I do mean is that the performance of this task is incumbent on a historian and that it is success in it—success in making us "understand"—which stamps the really great historian. A man for whom the acts of men are no more than events, like the fall of a cathedral spire, or the occurrence of an unexpected storm at the crisis of a battle, might, for all I can see, quite well supply the student of Political Science or its counterfeit "Sociology" with materials for constructing more or less sound theories about "social tendencies," but no man will be an historian unless he understands that, even if there really are any mere "events," the acts of fully awake and accountable human beings are acts and not mere events and that our quite unscientific but quite legitimate interest in a past which is our own past will not be satisfied until we have been made able to "understand" the actor behind the act. For this reason, though I see no reason why the historian should always add the function of the judge to his own and insist on formally pronouncing sentence on the persons with whom he deals, I must confess that Lord Acton seems to me to have understood what is properly to be expected of an historian better than Seeley and his followers, who seem to think that when the work of providing Political Science with materials for its formulæ has once been done, nothing much is left for the historian but to compose "Tales of a Grandfather".

III. BY F. C. S. SCHILLER.

THE theory of the three-member Symposium is supposed to be that the first string develops his Thesis, the second harps upon the Antithesis, while upon the third performer devolves the onerous duty of finding (if he can) the Higher Synthesis which resolves their discords. In practice, however, this is so arduous an undertaking that it is easier to make a triangular duel of it, and not infrequently it happens that the aims of the parties are so little co-ordinated that they attack, not one problem, but three or more. Usually this

comes about unintentionally, owing to the infirmity of philosophic purposes; but on this occasion I understand that Prof. Taylor wishes us to legitimate the practice, and consciously to aim at independent treatment, that is, to disregard the history of the debate. And though I am a little apprehensive that this procedure, if it became common, would foster in 'symposiasts' a vice to which philosophers are all too prone, that of solitary drinking—I mean, of course, *thinking*—in the present case I have no difficulty in complying with Prof. Taylor's request. For, sooth to say, I find that my predecessors have been singularly reasonable. They have abstained from firing off philosophic paradoxes at our common target, and from bombarding their audience with cryptic conundrums. Neither of them has asserted that Science alone is knowledge, and History is not, or that History is knowledge and Science is not. Neither has asserted that Science is concerned only with eternal truth, or that History has no relation or relevance to scientific truth. Both have refrained from the verbal juggling with the terms 'particular' and 'universal' which has so long seemed to be the sole contribution philosophy could make to any problem.¹ Both the unity of knowledge and the diversity of its kinds have been upheld in quite a moderate way.

Consequently it would not have been easy to quarrel with either of them, though incidentally both of them reveal that they do not quite understand pragmatism. With Mr. Collingwood's attitude indeed I find myself in such cordial agreement that I can accept all his contentions, though I think some of them may prove misleading unless they are safeguarded and supplemented by extensions and corollaries which he does not mention. Prof. Taylor's interesting paper I could not swallow so whole-heartedly: parts of it should, I think, definitely be rejected. But my reasons for so doing are so very simple that they would not lend themselves to any very protracted debate. Accordingly it seems quite possible that in this instance dialectics will be less instructive than a more direct approach to the problem;

¹ I am particularly appreciative of their abstention from this practice, in which neither term was ever defined or distinguished from the other. But if we cannot say wherein either particularity or universality consists, what is the use of predicating either of anything? And further, what meaning can it have to say that everything is *both* 'particular' and 'universal'? If that is so, and if neither 'particular' nor 'universal' can be, or be defined, *per se*, the distinction between them becomes an arbitrary distinction without a difference, and explanation in these terms is meaningless.

at any rate I will endeavour to develop our question independently and shall only refer incidentally to the points where my predecessors' treatment seems to me to require comment.

It is permissible perhaps to begin with a truism. Our question obviously implies that, whether or not Science and History are identical, they are not wholly different, but relevant to each other and to the nature of knowledge. For if they were not different, they would not be distinguished; while if they were utterly different, they could not be compared, and so no question could arise as to the precise difference between our cognitive procedure in Science and in History. It is also antecedently probable that such differences as may be found will not be very serious, for if they were, they would gravely detract from the unity of knowledge and the utility of recognising it. Further, if the differences between Science and History are not serious, it will be a question whether they are to be dignified with the title of 'differences in kind'.

I will follow up my first truism with a second, which ought to be deemed its equal. Of all the multitudinous definitions an object of inquiry may receive, the most significant is one which expresses the purpose for the sake of which it has become an object of inquiry. In other words, in order really to understand the nature and function of Science and of History, we must discover why they become objects of human interest and to what ends they minister, and then define them accordingly. If they serve a number of purposes and have several ends, it will be necessary to evaluate these ends, and to decide which of them is the highest and worthiest, and really justifies the interest taken in the object. For example, *food* is probably as universal an object of interest as can be found among men; it appeals to high and low, young and old, savage and civilised, and much is said and written about it. It has interest for biology, economics, ethics, politics, gastronomy, physiology, medicine; nay even for theology, seeing that the earliest religions appear to have been forms of food magic. It is evident, however, that the ends for the sake of which men are interested in food are not all of equal value.

The cases of Science and History seem similar. Both may be pursued for various, and for the same, ends. Thus some may study Science and some History, because it amuses them. Others, for the sake of a livelihood. The former end will appeal more to the amateur, the latter to the professional. Or again, both Science and History may be useful to the

politician, and be exploited accordingly. But none of these ends would yield a very adequate definition of these interests, and they would certainly not enable us to *distinguish* between the function of Science and of History.

We must therefore try again. Perhaps a deeper and more specific end is to be sought in the functions which human life is enabled to fulfil by knowing Science and History. What, then, is the *vital value* of each? Vital value both must clearly have, in some way or other; otherwise they could not maintain themselves as spiritual industries.

Now in the case of Science the answer to this question has become pretty obvious. The *essential* characteristics of scientific knowledge, which distinguish it from pseudo-science, divination, guesswork, metaphysics, verbiage, and nonsense, are *prediction and control*. It is that whereby we foresee the future and calculate the distant, and guide our action accordingly. It is the knowledge which is power, and which ministers to our desire for power. It is the knowledge which extends our power beyond the present into the future, which forecasts the consequences of our activities and enables us to foresee what will happen next. It liberates us, therefore, from the restriction of actual experience to the passing moment.

This achievement, however, is not enough. It is not enough to know the real as it is, in order really to know it, in order to control it. We must know also what it will be, and what it has been. To understand the actual and to treat it rightly, we must extend our knowledge backwards into the past, and regard it as a product of the ages.

We ask, therefore—how has the actual come to be as it is? This is the essential question which History tries to answer. Its province is the past; its purpose to reveal it, to redeem it from oblivion, to relate it to the present, in order that we may have the power over things that comes from knowledge of their past. It follows from this definition that prophecy is not the primary business of History; it leaves this to Science, which is not, however, restricted to the future; Science can calculate the past as well as the future, though only with the aid of History. The ultimate aim of both, however, is to minister to our need of controlling a reality that kills us if we don't.

If these definitions be accepted, it is clear what the difference is between History and Science. It is not, however, inconsistent with its recognition to add a warning that it does not imply any antagonism between Science and History, but demands their close co-operation. Clearly the historian

may, and must, use all the technique of calculation which Science proffers, to reconstruct the past. In return, the scientist must recognise that, in all that concerns the past, he needs the help of History.

In the last resort this means that he needs it everywhere. A birth-story attaches to every scientific fact, and an umbilical cord once connected it with the womb of time. All the *data* out of which scientific 'facts' are fabricated are primarily historical. If it is not historically true that a certain Mr. Dawson once found certain bones at a certain distance from each other in a certain deposit, the Piltdown skull was that of a man and the teeth were those of an ape, and *Eoanthropus Dawsoni* cannot be put together, and becomes a myth. If it is not true that trustworthy observers have seen the fall of meteorites, Laplace was right to argue that 'there are no stones in heaven, *ergo* none can fall from heaven'. If seers of ghosts and witnesses of miracles are always liars, the beliefs based on ghosts and miracles fall to the ground. In short, the truth is that all scientific laws presuppose scientific facts, and all scientific facts presuppose historical facts; thus every known 'law of nature' would crumble or evaporate if a limited (and usually quite a small) number of historical observations should be rejected as untrustworthy. Every scientific truth, therefore, has a past and a history, on which it remains dependent.

But every scientific truth also hopes to have a future. It means to remain true. It has the ambition and the duty to predict: it claims to regulate a course of events which it admits to be unique. The idea that a scientific law is a timeless formula, having eternal truth or validity and exempt from all obligation to embody or exemplify itself in the flux of events is a philosophic blunder, a blunder which scientists repudiate, because they know that the time-relation is left a blank only in order that their 'law' may be applied to and at *any* time. It retains a certain popularity among philosophers who have learnt nothing since the days of Plato; but I am glad to see that my colleagues are not of this kind. Mr. Collingwood is quite explicit in repudiating the notion that the whole business of Science is to generalise and that it has no concern with the particular: its function is to interpret particulars by means of generalisations. And he makes this his chief ground for denying any essential difference between Science and History. Prof. Taylor, too, admits that it can be argued that "the universal truths of science hold true of individual cases," though he would not, perhaps, admit that they are *meaningless* unless they do. As, however, unlike

Mr. Collingwood, he wishes to stress the difference between Science and History, he adopts an ideal of 'pure' science, of which that can be alleged which is manifestly false of actual science. 'Pure' science has no truck with 'fact,' and no connexion with 'applied'. It takes no dip in the great stream of events. Being purely 'hypothetical,' it has no relation with 'pure' history, which tries to be 'categorical'. But it has not occurred to him that if so, 'pure' science will neither work nor wash; it is pure *fiction* and a creature of abstraction. It is futile fiction and false abstraction. For the 'pure' principles must be used, and the pure science be applied. Moreover, Prof. Taylor's point can not be proved thus; for to show that 'pure' science and 'pure' history have no relation, either with each other or with our purposes, is no proof that actual Science and History are not interdependent and intended to co-operate with each other and with us. The actual collaboration of actual science and actual history Prof. Taylor does not appear to deny: it is only as 'pure' abstractions that they are irreconcilable. And this is merely a way of saying that these abstractions are unreal and useless; they do not serve to elucidate the actual functioning of knowledge, in which *all* our activities play into each other's hands.

Nevertheless there are differences between Science and History, and they should not be overlooked. We should note in the first place that, though both aim at an unambiguous account of their subject-matter, neither of them quite succeeds. Science, though it assumes, as a postulate of method, that the future is fixed and unambiguously calculable, does not succeed in predicting it completely. It ascribes this failure, quite consistently, to the infirmity of human knowledge, and not to any inherent recalcitrance of the real, or any impossibility of predicting the course of an indeterminate agent. But despite this explanation, the fact remains that our science cannot fully determine the future.

At first sight we are better off in regard to the past. We are accustomed to say that though the future may be, or seem, contingent, at any rate the past is fixed unalterably. It is dead and done with, and what is done cannot be undone, even by the gods. History is a record that stands, and cannot be shaken. All these beliefs are dangerous delusions. They spring from illusions that rest upon a false abstraction. We can abstractly conceive the past as existing *per se* and apart from our means of knowing it; if we do this, we can represent it as determinate and unalterable.

But such is not the character of the past *as known*.

The past in which we believe, and which we believe our histories to record, is *not* the object of an assured, determinate and definitive knowledge. It is always incomplete, dubious, undetermined. Its history is only a hypothetical reconstruction, often highly imaginative, out of utterly inadequate material. The more the logical character of historical evidence is examined, the more unsatisfactory it seems. It is full of bias, folly, error, discrepancy and contradiction. There is always too little evidence for it, and usually too much. For so much of the evidence is so bad and unenlightening. The historian therefore has to appraise and select at every step, and if he compiles a plausible tale—perhaps only a *fable convenue* or a masterpiece of propaganda—he is acclaimed as great. Another may achieve as much, and then we can accept whichever tale we please. For there is no verification of either, as in Science, and no crucial test. The only verification History can claim lies in alleging nothing grossly improbable, and nothing from which our actual present could not have followed. It must not be said that Hannibal, not Brennus, captured Rome and burnt it. For if he had, Mediterranean man would presumably now be speaking a Semitic, not a Latin, tongue.

But this verification by consonance with the actual is wholly insufficient. A thousand histories, all different, might equally conduct to the actual facts. When therefore we look back upon the past, a thousand threads of historical sequence radiate from the present into the past. There are a thousand roads which we might follow. Which of them shall we choose as the 'true' history, to lead us to the past as it 'really was' and changes not? We do not know. We cannot know. Actually, we choose the history which seems to us most promising and congenial; we choose with the character, the intelligence, the knowledge, the prejudices, the history, we have. Is it astonishing that we choose differently, that the fashions change in history as in medicine, and that all the really important questions, *i.e.*, those which are felt vitally to affect the present, remain matters of partisan debate? Actually, therefore, the past is for us as indeterminate as the future: the determination of both remains an overbelief which does not debar us, in either case, from reckoning with alternatives.

So far the scientist and the historian appear to be, very definitely, in the same boat, even though they do not row on the same side of it. The scientist, however, has one definite advantage. The verification of a historical hypothesis, which deduces the actual from what is judged to be the best

interpretation of the evidence, was, we saw, very imperfect, and if any portion of the structure is insecure, there is no help for it. Nothing can be done, because History cannot be re-enacted, and observed afresh. It never quite repeats itself, because if it tried to, the very fact that it had occurred before would, if it were remembered, alter the result. Hence the historian cannot *experiment*. The scientist can. If he is not satisfied with the evidence for his hypothesis, he can devise fresh tests, or repeat the old ones. True, such repetition is never absolute, and a theoretic quibbler may always object that therefore the case may not turn out to be the 'same,' nor indeed a case at all, of the theory under examination. But experience shows that over extensive fields of scientific research the conditions practically *can* be repeated and the differences between the various experiments rendered minimal and irrelevant. Hence verification is a much more potent weapon in Science than in History, though even in Science no amount of verification of a 'law of nature' by subsequent fact suffices to prove it absolutely true.¹

The truth, therefore, both of Science and of History is pragmatic; it is established in the same way as the rest of our knowledge. In ultimate analysis there is but one truth, and one way of ascertaining it. There are differences in the working of our method in Science and in History; but these are due to the different recalcitrance of the material to our various purposes. In the end, however, Science and History stand and fall together; and I at least can conceive no worthier aim for a philosopher than to stand by *both*.

¹In regard to mathematical 'truth' it may be observed, (1) that to admit that it is deducible from postulates which are 'arbitrary' (in the sense of admitting alternatives) is an admission that it is *not* absolute, while (2) the necessity of accounting for the *actual choice* of postulates imposes *empirical* conditions on its truth. For the postulate-systems preferred are either chosen on subjective grounds, or are those which have shown themselves convenient and useful in the interpretation of our experience. Their empirical validation, however, disposes of the Platonic charge that the principles of the sciences are arbitrary and insecure. They would be arbitrary only if they were chosen without rhyme or reason, they would be insecure, only if they had *not* received overwhelming confirmation from the working of the sciences.

IV.—SYMBOLISM AS A METAPHYSICAL PRINCIPLE.¹

BY WILLIAM TEMPLE, BISHOP OF MANCHESTER.

IT is abundantly clear that one of the chief characteristics of contemporary philosophy is the place which it gives to the concept of Value. There is nothing unprecedented in this. Indeed it is not possible to give a higher place to Value than Plato did when he made the Good the supreme principle in reality or required of Anaxagoras that, in order to illustrate the supremacy of Reason, he should prove the earth to be either round or flat by showing which it is better that it should be. Aristotle, whom no one has yet censured for sentimentalism, similarly clinches his argument for the Unity of God or the governing principle with the maxim and the quotation: τὰ δὲ ὄντα οὐ βούλεται πολιτεύεσθαι κακῶς. "οὐκ ἀγαθὸν πολυκοιρανίη· εἰς κοίρανος ἔστω." But though not unprecedented, the prominence of Value in the thought of our time is characteristic. To the religious thinker, it is welcome. And yet there is a remarkable indefiniteness in the current use of the term, and the relation of Value to Reality or Substance is by most writers either not discussed or is very sketchily outlined. The aim of this paper is to offer a very small contribution to the discussion of these questions.

I.

The structure of Reality, as it presents itself to us, seems to be as follows: It consists of many grades, of which each presupposes those lower than itself, and of which each finds its own completion or perfect development only in so far as it is possessed or indwelt by that which is above it. This seems to involve an infinite regress, and suggests an infinite progress. Whether there is in fact a lowest and a highest term in this scale of finite existences I do not know, and I do not greatly care. In a book of mine called *Mens Creatrix* I have tried to show that the infinite series is not necessarily meaningless in logic or futile in ethics. At present I am not

¹ Contributed to the Joint Session of the Mind Association and the Aristotelian Society at Manchester, July 14th-16th, 1922.

concerned with the problem of lowest and highest terms, but with the facts before us, which may fall midway between such terms. I am rather tabulating impressions than constructing a system, though the tabulation is of interest because it suggests the principle of a system. To make my present meaning clear it will be enough to take the broad divisions: Matter, Life, Mind, Spirit. These grades may be for our present purpose indifferently regarded as various entities or as different modes of action and re-action. Matter is itself a term covering many grades; so is Life. But each has sufficient identity in itself and sufficient distinctness from the others for the requirements of the argument.

The term Matter is here taken to cover the substances or the modes of action and re-action which are studied in the sciences of Physics and Chemistry. It is at once quite clear that those sciences give no account of the self-movement which is one characteristic of Life, or of the comprehension of spaces and times which is one characteristic of Mind. The lower cannot explain the higher. But that is not all. The living organism has in its material constitution a unity of differences, a subtlety of co-ordination, a spontaneity of adaptation, that no knowledge of Physics and Chemistry would enable the observer to anticipate. The material only reveals its full potentialities when Life possesses and indwells it. The later development reveals what had all along been potential in the earlier; but no knowledge of the earlier apart from that development would have made possible a prediction of the development. Matter only reveals what it really is when Life supervenes upon it.

Similarly Life only reveals what it really is when Mind supervenes upon it. No study of zoology and biology will enable the student to predict the occurrence among living things of Shakespeare or Bach or Leonardo or Newton. The use of faculties, which at first are used for mere survival, in the interest of ends that have nothing at all to do with survival, must occur in fact before it can be anticipated in theory. So too Mind as intellect only shows what it can be and do when it is guided by Mind as Spirit. The existence of Art and Science, though they make upon Life an absolute claim, will not account for the self-sacrifice of the hero or the martyr. And, if Religion is to be trusted, even Spirit (as known in our experience) only reveals what it can be and do when it is possessed by that Highest Being, whom we call Spirit because Spirit is the highest grade of Reality known to us.

We begin then with the conception of Reality as existing

in many grades, each of which finds its own completion or perfect development only in so far as it is possessed or indwelt by that which is above it. But we then notice that each depends for its actuality upon those which are below it. Matter itself as experienced by us can be reduced to what is simpler than itself, whether to α , β and γ particles or still more ultimately to Space-Time. Life is unknown apart from living organisms, which are Matter informed by Life. Mind is unknown except in reasoning living organisms. Spirit is unknown except in conscientious, reasoning, living organisms. Whether the higher grades can exist apart, there seems to be no means of deciding; in our experience they never do.

Thus we see each grade dependent for its existence on the grades below, and dependent for its own full actualisation on the grade or grades above. Such seems, apart from any theory of its origin or *raison d'être*, to be in fact the structure of Reality.

II.

At this point I must ask leave to assume that when we ask for an explanation of the Universe as a whole we are bound to formulate the answer in terms of Will. To summarise very briefly the argument by which I should seek to justify this assumption, I would submit that there is in our experience one, and only one, self-explanatory principle—namely Purpose or Will: no doubt, if anyone can believe in a purpose with no will behind it, we should have to say "Purpose" only, leaving "Will" as a precarious inference; but as it appears that Purpose and Will are terms that mutually imply each other, we may speak of either indifferently. There is a "problem of evil," but there is not in the same sense any problem of good. When we find as the cause of any phenomenon an intelligent will which chose to cause that phenomenon to occur, we raise no further questions, unless we fail to see how that will came to seek this occurrence as good. We may be puzzled by the way a man exercises choice; but our problem here is not as a rule a problem of efficient causation. When we sympathise, we are not puzzled. If I say of anyone "I cannot understand acting like that," I do not mean that I cannot give a psychological analysis of the motives of the action; I mean that I cannot imagine myself doing it. When in the causal regress we arrive at a will, the regress is at an end, and to understand means, not to give a causal explanation, but to sympathise.

We have reached an ultimate term. And when we do sympathise, our mind raises no more questions. The only explanation of the Universe that would really explain it, in the sense of providing to the question why it exists an answer that raises no further question, would be the demonstration that it is the creation of a Will which in the creative act seeks an intelligible good. But that is Theism. Theism of some kind is the only theory of the universe which could really explain it. Theism may be untenable; if it is, the universe is inexplicable. Merely to show how it fits together as a rational system does not explain it, for we are left still asking—why does it exist at all? When once that question is asked the answer must be found in Theism or nowhere.

I need hardly say that I do not advance this outline argument either as the only defence of Theism or as a sufficient intellectual basis for it. The whole body of argument that is articulated by Prof. Pringle-Pattison and Prof. Sorley in their Gifford Lectures, or by Mr. Matthews in his recently published Boyle Lectures, is here presupposed. But the point which I have just mentioned, and which deserves more attention in my judgment than it generally receives, is the one most germane to the group of considerations with which we are now specially concerned. Other arguments seem to establish the principle that the universe must be interpreted by spiritual rather than by mechanical or other materialistic categories. Other arguments tend to establish the ethical character of the spiritual power or powers that govern the world. Philosophically everything is ready for Theism. But actual belief in a living God rests primarily, as I think, on religious experience, and finds its intellectual support in the reflexion that this belief is capable in principle of supplying an explanation of the very existence of the Universe, which no other hypothesis available to us affords any hope of doing. That is no proof. It cannot be laid down as an axiom that there must be some explanation of the existence of the Universe. If the existing scheme of things be internally coherent, it cannot be said that the mind imperiously demands more than this for its satisfaction. It is true that we have to choose between postulating a rational universe and accepting complete scepticism. It is not true that we have to choose between theism and scepticism. I should be very sorry to have to believe that Reality is what Mr. Bradley describes or even what Prof. Pringle-Pattison describes. But I could not reject their accounts of it only on the ground that they do not explain its existence as a whole. For while it is an additional advantage in any theory

if it can do this, it is not fatal to any theory that it should fail to do this, or even refuse to attempt it. It may be that there is no explanation of Reality itself, and that it is not self-explanatory except in the sense that all its parts support each other in constituting the whole. Or, again, it may be that there is an explanation of Reality, but that it is something wholly inaccessible to the mind of man. There seems no reason to suppose that mind, in its human manifestation, either includes, or itself is, the last term in cosmic evolution, and if there is more to follow, then though human mind would comprehend the lower forms it would not know at all what constituted the higher forms, and it would be in these, not in human mind, that the explanation of Reality might be found.

None the less, if there is an available hypothesis which is capable in its own nature of supplying the explanation of Reality, it is thoroughly scientific to experiment with it and see if it can make good its claim. Now Purpose, as the expression of a Will, is such a principle. But to seek the explanation of the Universe in a Purpose grounded in a Will is Theism; it is the acceptance, provisionally at least, of the doctrine of God as Creator. From religion there comes abundant support for this doctrine. To some religions, and notably to the Jewish and Christian religions, it is essential and fundamental.

III.

Now if we assume the structure of Reality to be such as I have outlined, and if we accept (at least for purposes of enquiry) the explanation of it which Theism offers, certain consequences follow, which it is the main purpose of this paper to trace out.

Will acts always for the sake of value, or good, to be created or enjoyed as a result of the action. It is precisely as so acting that it is self-explanatory and intrinsically intelligible. This would lead us to expect that whatever Will creates is either itself good or is a means to good. Moreover if what is created is good not (or not only) as a means but in itself, this means that its very being or substance is good. I do not, at present, go so far as to say that good is the being or substance of all that exists, but we are entitled and even bound by the hypothesis adopted to say that whatever exists must either be a means to something which is substantially good or else be itself substantially good. We seem therefore to be led up to a new enquiry into the relations of value and reality.

Now if I may take Prof. Pringle-Pattison as an illustrious example of contemporary philosophy, and discuss, not the

details of his argument, nor its claims taken as a whole, but the general impression created by it on my own mind, and also (as I find) on many other minds, I would venture to suggest that many of the anxieties with regard to it which that general impression arouses would vanish if he saw his way to a more thorough-going conception of God in terms of Will. For the general impression left on my mind by his great book on the *Idea of God*, and greatly strengthened by his essay in the volume entitled *The Spirit*, is that he accepts the Universe as somehow existing, and then finds that it reveals values, which are regarded all the while as being adjectival to it. That they appear at all is a determinant consideration for the philosopher, and yet they appear rather as appendices of an otherwise existing universe than as themselves its constitutive elements; and when we reach the Being in whom all values are realised, He hovers uncertainly between two positions, being at one time the Ground of all existence and at another a characteristic of a universe which would apparently continue to exist (though shorn of its values) if He were to cease. And it is the latter position to which He seems to be ultimately relegated. I have no doubt that this summary is unjust to Prof. Pringle-Pattison. Almost any summary of a theory elaborated with so delicate a balance and an argument so closely knit would be unjust. But at the end of *The Idea of God* I was left with a sense that this book makes God adjectival to the Universe, and the essay in *The Spirit* removed all doubt on the question. And yet I was sure that in the main the Professor was dealing with the matter on right lines and had rendered a great service to philosophy, and especially the philosophy of religion, by following the method which he had chosen.

The question with which I am now concerned is this: should we conceive of things as existing independently and possessing value as an attribute, or should we think of value as itself the true reality which realises its various forms through embodying itself in things—or through the creation of things for this purpose by the Divine Will?

Now I believe that our difficulty arises from the fact that Philosophy being an intellectual activity, always tends to depend more upon that search for an ultimate value which is conducted in science than upon the two kindred efforts of ethics and of art. In science the intellect is not only supreme but sole; it is natural for the intellect to take the methods and operations of science not only as its method but also as determining the subject-matter of its enquiry. That I take to be the essential feature of the heresy of intellectualism.

Philosophy must be intellectual or it ceases to be itself. But the intellect always gets its subject-matter from outside itself; it is ready enough to accept it from the physical world, and from its own procedure and results in dealing with the physical world. It is less ready to accept as the material of its operations the procedure and results of human activities which are either not purely or not at all intellectual. Yet for a satisfactory metaphysic it must include these, and indeed (as I think) must give them a determining influence. The goal of Science is on the objective side Reality, on the subjective side Knowledge; the goal of Art is on the objective side Beauty, on the subjective side Creation and Appreciation; the goal of Ethics is on the objective side Society, on the subjective side enlightened Conscience and dutiful Action. It is apparent that whereas Science ends in Knowledge, which leaves the objective world as it finds it, Art and Ethics—and Religion—aim both at a comprehension of the object and at action which modifies the object. Now if the intellect is led by its own process to the affirmation, or at least to the supposition, that the explanation of the Universe is to be found in the activity of a Creative Will, it must go on to accept those human activities which include some creative energy as surer guides to the constitution of Reality than its own special activity of science.

Starting with the general outlook appropriate to science, philosophers have generally made Reality their substantive notion, while Value has become adjectival. It is quite true that Plato spoke of the Idea of Good as *ἐπέκεινα τῆς οὐσίας*—which the context proves to mean "above and beyond objective being" (*Republic*, VI., 509 b); but he does not follow this up by including ethics and politics in his propædæutic studies; he remains under the predominant influence of geometry. So S. Thomas Aquinas is quite thorough in the deliberate and reiterated identification of Good with Being—*Bonum et ens sunt idem secundum rem: sed differunt secundum rationem tantum* (*Sum. Theol.*, Pt. I., Q. V., A. I.)—yet he goes on to treat Being as prior because it is the first object of the intellect, and thereafter the whole concept of Value almost disappears. Consequently his definition of Substance as that which exists of itself—*substantiae nomen . . . significat essentiam cui competit sic esse, idest per se esse* (*Sum. Theol.*, Pt. I., Q. III., A. V.)—never leads him even to consider whether this is not the same as to say that Substance and Good (or Value) are synonymous terms: hence the chief difficulties of his sacramental theories.

But the identity of substance (so defined) with Value

follows inevitably from a thorough-going acceptance of the Theistic hypothesis. The Universe is to be conceived as deriving its origin and unity from a Creative Will. But the correlative of Will is Good or Value; therefore the most fundamental element in things is their Value. This is not a property which they have incidentally; it is the constitutive principle, the true self, of every existent. Aquinas says that a thing is perfect in so far as it exists: *Intantum est autem perfectum unumquodque inquantum est in actu* (*Sum. Theol.*, Q. V., A. I.)—and that everything is good so far as it exists: *Omne ens, inquantum est ens, est bonum* (*Sum. Theol.*, Q. V., A. III.). The inversion of this is the fertile truth: everything exists so far as it is good. Value and value alone is substance or has substantial reality.

IV.

It is certainly true that Value is only actual in the various things that are valuable: and it is only fully actual (though this is of no consequence for our present purpose) so far as it is appreciated by some conscious being. And it is tempting to separate the Good from the good thing, and to demand either some account of it in such separation or else a method of apprehending it in separation. But to do this is to repeat the mistake made by the Hedonists in Ethics. When I am hungry, I want food and not (except incidentally) the pleasure of eating. Desire is not of some one thing, such as pleasure. And yet it is true that when I am hungry what I want is the value or the good of food; but this is not separable from the food, and is not even properly distinguishable from it, though it is distinguishable from other aspects of the particular food in question which are irrelevant to my hunger.

So Will aims at Good in all its forms; and as God makes the world, He beholds it as very good. There is the problem of Evil of course, and it may be that it will wreck this whole fashion of philosophy; but we cannot embark upon the discussion of it here—I can only refer to an attempt to handle it in my book *Mens Creatrix*. Our concern just now is with the method which philosophy must pursue if it adopts this principle that only Value has substantial being.

It is clear at once that Ethics and Politics, and Æsthetics, will be exalted alongside of Mathematics, as the typical activities of Mind, and that on the whole they will be the more normative for Metaphysic. The Universe will be approached less as a problem (or theorem) in Geometry, more

as a Drama or Symphony, and as a Society in process of formation.

Now if the structure of Reality is such as we described, and if the problem of Metaphysics is to be approached along the lines now indicated, we begin to see a great unification take place. The lower grades, we said, only attain to the fulness of their own being so far as they are indwelt and dominated by those above them. They exist then, ultimately, to embody or symbolise what is more than themselves. The universe is sacramental. Everything except the Creative Will exists to be the expression of that Will, the actualisation of its values, and the communication of those Values to spirits created for the special value actualised through fellowship in creation and appreciation of values. Men can do some of this work themselves. Speech is a manipulation of sounds for just such communication and fellowship. By this doctrine the reality of the objects in the world is not divorced from our sense of their significance. A friend gave me during the war an illustration to show how familiar a fact is the transvaluation, which on this theory is the only true transubstantiation: Suppose a man comes to see me, finds some strips of coloured calico on the floor, and amuses himself by dancing on them to show his contempt for what he takes to be my interests; I may think him a tiresome fellow, but that will be all: now suppose those bits of calico have been sewn together to make my national flag, and he dances contemptuously on it; I shall kick him out of the house.

That is comparatively a trifling instance. In any case the symbolism of a flag is purely conventional. Yet even here it seems absurd to say that the reality of the flag is the same as the reality of the strips of calico. The accidents (as the schoolmen would say) are the same; the substance is changed.

Beginning with such a conventional symbol we may go on to fuller symbolism such as that of great Art. Here the principle emerges that to be a true or (as I have named it elsewhere) an essential symbol, a thing must be itself an individual instance of what it symbolises. So Othello can symbolise jealousy because he is a very individual jealous man. In great art, at least, the symbol is unique, and there is no other way of saying what the artist has said. In Emerson's great phrase "The word is one with that it tells of". If after reading *King Lear* or hearing the Fifth Symphony a man asks what either means, we can only tell him that each means itself; but that is the extreme opposite of saying that either is meaningless.

In that highest sphere of creative art which we call human conduct, the good or value sought is that of Personality (or Character) in Fellowship, with all the varieties that this implies. Actions have their value as symbolising and as producing this.

It is clear that as we advance from the purely conventional symbolism, represented by the flag, to the essential symbol of great art or of ethical conduct, the subjective element is reduced in importance, at least so far as it is variable. The Union Jack has value only for those who are familiar with a particular convention; and to those who do know this it may have very different values—for Lord Carson and Mr. de Valera, for example. Yet even here the value is constitutive in so far as the flag is only made for the sake of the value. But in the symbolism of Art and Conduct there is no such variability. Men may still react in varying degrees of intensity to the different embodiments of value; some are more stirred by colour; some more by line; some are more stirred by heroic energy, some more by patient humility. But at this level there is no doubt what is the value expressed in the work of art or the moral action.

If we start with this principle of symbolism as our basis, we shall not, I think, be led to any system very different in its structure from such as is set out, for example, by Prof. Pringle-Pattison. The difference will be mainly one of emphasis and of detailed expression; but difference of this kind will be all-pervasive. In ways innumerable the statement will be (as I think) more luminous in detail, more sympathetic. There will be more understanding of the different phases of Reality from the inside. For it is the characteristic of æsthetic and moral appreciation that in them we become absorbed in the object itself, as a single whole, and understand it by letting it take possession of us, whereas in science we understand partly by setting the object in an ever-widening context and learning what forces mould it from without, and partly by breaking it up analytically into its own constituent elements. Of course our method will not dispense with the processes and results of science; but it will depend quite equally, or rather more, on those of art and morality. We shall not dispense with the psychologist or sociologist; but we shall expect to learn still more of philosophic value from the dramatist and the statesman. We shall still seek rational coherence, but shall interpret it more as realised in the *Civitas Dei* than as represented by the solution of logical contradiction.

Above all we shall avoid two difficulties that are inherent

in the other method. We shall not try to treat the merely physical as self-subsistent, leaving values to attach themselves to it in a rather vague manner, while still declaring that the explanation of the lower is in the higher; but making this declaration, we shall insist that the higher are the more nearly self-subsistent, while only the Highest is altogether so. And we shall not leave God to hover uncertainly between His function as the universal ground of existence and His adjectival attachment to the universe as the sum or realisation of its values, but we shall confidently affirm Him as the sole self-subsistent Being, existing in absolute independence of all else, for whose pleasure and by whose creative activity all things are and were created.

V.—DISCUSSIONS.

PHYSICS AND PERCEPTION.

My purpose in what follows is to deal with certain questions raised by Mr. C. A. Strong in his article on my theory of the external world (MIND, July, 1922). Mr. Strong finds difficulties in certain points of my theory of perception, which are really points in my theory of physics. The main purpose of this whole outlook is, in my view, to fit our perceptions into a physical context, and to show how they might, with sufficient knowledge, become part of physics. I think the questions at issue between Mr. Strong and me all concern matter rather than anything psychological; I shall therefore begin by treating the topics to be discussed purely from the point of view of physics.

Mr. Strong is surprised (p. 309) that I should suppose particulars which are members of different pieces of matter to exist all at the same place, in case the place is one reached by light from all these different pieces of matter. He is also surprised (p. 310) that objects are "apparently everywhere except in the place where we see and feel them," and that "a multitude of events, all happening after 12 o'clock, should be the constituents of an event happening at 12 o'clock". He points out, as though it were a consequence I had not observed, that "the object, as physical science conceives it, is not correctly defined as *the system* of all the perspectives . . . but is rather their mathematical limit" (p. 311).

It is true that I maintain these propositions (to which I shall return presently), and it is true that they are somewhat curious. But the curiousness is that of modern physics, for which I am not responsible. (I wish I were.) A piece of matter, according to modern physics, has two aspects, one gravitational, the other electromagnetic. (If Weyl is right, as seems highly probable, these two aspects can be reduced to one, but it is not necessary for me to assume that this reduction is possible.) Both these consist of a field, extending theoretically throughout space-time. The gravitational field consists in a certain distortion of space-time, making it everywhere more or less non-Euclidean, but particularly so in a certain neighbourhood, the neighbourhood in which we say the matter is. The electromagnetic field consists of "something" (the physicist cannot say more) which satisfies Maxwell's equations, and is likewise theoretically diffused throughout space-time, though with more intensity in a certain neighbourhood. As Einstein puts it:—

"Da nach unseren heutigen Auffassungen auch die Elementarteilchen der Materie ihrem Wesen nach nichts anderes sind als Verdichtungen des elektromagnetischen Feldes, so kennt unser heutiges Weltbild zwei begrifflich vollkommen von einander getrennte, wenn auch kausal aneinander gebundene Realitäten, nämlich Gravitationsäther und elektromagnetisches Feld oder—wie man sie auch nennen könnte—Raum und Materie."¹

In every little region of space-time, according to this view, there are two things to be considered: first, the metrical structure of the neighbourhood, which represents gravitation, and can be analysed into a number of superposed gravitational fields, each with a centre, which may be taken to be an electron; secondly, the electromagnetic field, which is similarly analysable. There are thus a number of things happening everywhere always. What we call one element of matter—say an electron—is represented by a certain selection of the things that happen throughout space-time, or at any rate throughout a large region. We cannot speak in any accurate sense of the "history" of a piece of matter, because the time-order of events is to a certain extent arbitrary and dependent upon the reference-body. Each piece of matter has, however, a "proper time," which is that indicated by clocks that share its motion; from its own point of view, this proper time may be used to define its history. But it must be understood that a piece of matter is only a convenient grouping of occurrences which extend throughout space-time; it is these occurrences, not matter, that physics accepts as ultimate.

These occurrences are ordered in a four-dimensional continuum called space-time, each "point" of space-time containing many such occurrences. There are no accurate large-scale metrical relations between occurrences in different regions, but within one small neighbourhood there are approximate metrical relations, which are more or less non-Euclidean according to the gravitational field in the neighbourhood. All ultimate physical relations are embodied in differential equations, and only hold accurately in the infinitesimal. There are no longer such things as straight lines of finite length, or time-intervals that are not very short. That is to say, all relations between distant occurrences, even those that we have been accustomed to regard as purely geometrical or chronological, proceed by propagation through the intervening region, like light.

It is into a physical world of this description that we have to fit our theory of perception.

Before proceeding to this task, there is a philosophical question to be disposed of. Mr. Strong says:—

"Mr. Russell accepts the phenomenalistic principle—as we may call the denial of the legitimacy of transcendence—and his theory is, in the main, the application of it to perception. Does he

¹ *Aether und Relativitätstheorie*. Rede gehalten am 5 Mai, 1920. Berlin, Julius Springer, 1920, p. 14.

adhere to it strictly everywhere? The question is pertinent; for a principle which you can disregard when it becomes inconvenient is perhaps only a prejudice."

I have never called myself a phenomenalist, but I have no doubt sometimes expressed myself as though this were my view. In fact, however, I am not a phenomenalist. For practical purposes, I accept the truth of physics, and depart from phenomenalism so far as may be necessary for upholding the truth of physics. I do not, of course, hold that physics is certainly true, but only that it has a better chance of being true than philosophy has. Having accepted the truth of physics, I try to discover the minimum of assumptions required for its truth, and to come as near to phenomenalism as I can. But I do not in the least accept the phenomenalist philosophy as necessarily right, nor do I think that its supporters always realise what a radical destruction of ordinary beliefs it involves.

I will try to make more explicit my attitude on this question. Mr. Strong says: "You cannot go beyond your own sensations, or the world as they present it to you" (p. 312). This position is not maintained by Mr. Strong on idealist grounds, but on grounds of straightforward theory of knowledge. His position is, I suppose, that we have immediate knowledge of our sensations, but that this knowledge is not of a sort to enable us to infer anything other than our own sensations. I should reply: (1) that we do not immediately know either our own sensations or anything else; (2) that no atomic fact can ever be demonstratively inferred from any other atomic fact; (3) that, assuming the validity of induction and analogy (on the lines set forth by Mr. Keynes), it is possible to make *probable* inferences from one fact to another; (4) that in such inferences the inferred probable fact need not lie within our experience or anyone else's; (5) that philosophy has immensely overestimated the importance of knowledge, which is merely a physical relation between physical occurrences, or at any rate does not differ from this in any important way.

(1) The question of "immediate knowledge" can only be treated historically; it only arises when we have reached the stage of Cartesian doubt. At this stage, we find ourselves with a system of beliefs as a going concern, and it strikes us that some of these beliefs are inferred, while others are not. It is difficult to define what is meant by an "inferred" belief. When, for example, you see a tree beginning to fall, you expect to hear a crash; but this belief as to the future has not been inferred by a logical process. It is, however, derivative from what you see; if your belief were challenged, you could allege what you see in justification. All beliefs which are in this wide sense derivative come within the scope of Cartesian doubt, unless some logical process can be found by which they might have been inferred from beliefs which are in no sense derivative, or at any rate not derivative from other beliefs. When we start to look for beliefs which are not derivative, we find,

at first sight, three kinds: perceptions, memories, and logical principles. To begin with the last: I suspect that logical principles are really always propositions about symbols, and are derivative from perceptions of geometrical (or quasi-geometrical) relations among symbols. That is to say: a logical principle never asserts that this can be inferred from that, but only that this symbol and that have the same meaning; the assertion that two symbols have the same meaning is based upon a relation between their forms.¹ It would take me too far from my theme to dwell further upon this question. As for memories, it might be thought odd to include them among non-derivative beliefs. I do not think one would naturally include them in the usual case, where what is remembered was perceived when it happened; but when, as sometimes occurs, we remember something which we did not notice at the time, it seems as if the remembrance had the same claim to be regarded as non-derivative as a perception would have. This brings us to perceptions. Mr. Strong does not discuss my analysis of perception, which, so far as I know, is orthodox; I assume that he does not seriously disagree with it. Thus a perception consists of two parts: (a) a core of sensation; (b) images and beliefs called up by the sensation through the influence of past experience. The second part is derivative in an important sense, and must certainly be included within the scope of Cartesian doubt, since the beliefs which enter into it are sometimes erroneous. The first part does not consist of beliefs, but is a mere occurrence, of just that kind with which physics is concerned and by which its theories are empirically tested. Moreover, it is a difficult question of theory to discover the sensational core in a perception, and it is highly doubtful whether it can be distinguished from the accompanying images except by assuming an external world with which it is correlated in a way that images do not exactly share. We are thus left with nothing immediate except the core of sensation, which is not knowledge, and is not itself immediately *known*.

(2) That no atomic fact can ever be demonstratively inferred from any other atomic fact is again a view which I have taken from Mr. Wittgenstein; it obviously hangs together with his view of logical principles. It is of course a view at least as old as Hume. I do not see how anyone can dispute it who examines the nature of logical inference. I do not mean to deny that from the fact that two propositions are true we can infer that each of them severally is true, nor do I mean to deny the validity of Barbara. But such methods do not give *new* knowledge, and I do not see how the methods of demonstrative logic can ever do so. An "atomic" fact is one which does not consist of two or more facts; it is implied that it is not general.

(3) On the question of probable inferences by induction and analogy, I am prepared for the moment to accept what Mr. Keynes

¹ I have adopted this view from Mr. Wittgenstein. See his forthcoming work on *Philosophical Logic* (Kegan Paul).

has to say, though I have no doubt that he has only laid down the broad lines of a theory which can be amplified. I assume in practice the validity of inductive methods as they occur in science, although I do not think that the results obtained are certain. In many cases they are far from certainty, but no other method will lead to results having a higher degree of probability. It is because of the absence of certainty that it is desirable to organise and interpret science in the way involving fewest assumptions; this is the reason why, in practice, I approach as near to phenomenalism as I can without destroying the whole edifice of science. What is involved is not an absolute philosophical principle, but a method of securing a higher degree of probability.

(4) When inferences are made by analogy and induction, what is inferred need not lie within our experience or anyone else's. It is clear, in the first place, that we only employ such inferences when what we infer does not lie within our present or remembered experience. We therefore habitually assume that they are valid as applied to future experience. If so, what can prevent them from being valid as applied to something not experienced at all? There is of course the idealist position, according to which it is logically impossible for anything to exist without being experienced; but this, I gather, is not Mr. Strong's position. His view is merely that there can be no valid inductive inference from what has been experienced to what will never be experienced. I do not know how he would justify this view. Of course it is true that what is not experienced cannot be directly verified, but it can form part of a body of hypothesis of which other parts can be verified. It is natural to suppose that Neptune existed before it was discovered. If you see your cat running away with a fish which was in your larder, it is natural to suppose that the cat has been in the larder. Such inferences transcend experience in the way which Mr. Strong regards as illegitimate; but I do not see in what respect they fail to conform to the canons of inductive inference.

(5) Since Kant—perhaps since Hume—philosophy seems to me to have overemphasised the importance of knowledge, and the difference between what we know and what we do not know. Perhaps the trouble goes further back, to the Cartesian emphasis on the difference between mind and matter. It is clear that Mr. Strong regards our visual perceptions as something very different from what physics treats as light, and that his reluctance to infer beyond experience is bound up with this belief that, if there is anything beyond experience, it must be very unlike sensations. I believe this to be a mistake. To my mind, the world is full of particulars of the sort dealt with by physics, and some of these particulars (namely those in places where, as we say, there is a brain) have peculiar effects which are called "being known" or "being experienced". I think that particulars (of which there are many in one "point" of space-time) can be collected into sets of such a sort that two neighbouring members of the same set differ very little.

I think that when I see (say) a penny, what I perceive is one member of the system which is the momentary penny, and that it is that member which is situated (according to one meaning of "situation") in a certain part of my brain. I think that, very near this part of the brain, there are closely similar unperceived particulars which are other members of the momentary penny; there is no solution of continuity in passing from what I perceive to the outside particulars dealt with by physics.

If this view is correct, a mental occurrence is to be called a "perception" when it has a certain kind of relation, based upon certain differential laws of change (those of perspective, to the first order), to a number of other occurrences all linked with each other in the same way. Common sense imagines that there is a "thing" which "causes" all these occurrences, but that is an unnecessary hypothesis, which is avoided by defining the "thing" as the group of these occurrences. Thus a "perception" is a member of a thing occurring in a place where there are mnemonic effects, and it is these mnemonic effects which give rise to what is called knowledge of the thing.

Why should such a theory be thought probable? (I do not claim that it is more than probable.) (a) Because it harmonises physics, the physiology of the sense-organs, and psychology. (b) Because it fits perception into that correlation by differential equations to which all physical laws have been reduced, and avoids treating perception as a case of action at a distance; in other words, because it is in harmony with the principle of continuity, which, though not logically necessary, has been found increasingly fruitful in science. (Continuity here is not to be understood in a strict sense, but only in an approximate sense. In its strict sense it is incompatible with the theory of quanta, and very likely false.)

My view of the relation of what we perceive to physics is the same as that of Dr. Whitehead, who first persuaded me to adopt it. I do not think that he would agree with my psychology in other respects, but in this matter the view set forth in his two books is practically the same as that which I am advocating. He holds, as I do, that colours and sounds and secondary qualities generally should not be extruded from the physical world. The habit of shutting them out he calls the "bifurcation of nature". But he still allows a bifurcation between nature and mind, perhaps only because he deliberately excludes mind from his theme. I wish to include nature and mind in one single system, in a science which will be very like modern physics, though not at all like the materialistic billiard-ball physics of the past. A great deal of work will be required to show in detail how the data of sense are to be fitted into physics. What Dr. Whitehead and I have done so far is only a small part of the necessary work, which probably neither he nor I will be able to complete. I only want, as yet, to recommend the general point of view as a possible one, which deserves to be worked out.

I will end with a discussion of some special points raised by Mr. Strong. On page 309, he objects to the theory that, at a place from which a number of objects are visible, perspectives of all of them exist, on the ground that there is need of a lens to separate out the different light-rays. He admits, however, that "the perspectives can by analysis be separated out," and that is quite enough for me. You cannot by analysis separate out what was not there. He argues that, apart from something like a lens, "what exists there is only a synthesis of effects, and not anything like the stars from which the rays proceeded". Up to a point, this is true, and it accounts for the vagueness of perception. I emphasised this point in *Analysis of Mind*, pp. 135-136.

Space comes next. "What first strikes one in this theory is the curious reversal of the spatial position of objects which it seems to involve—objects being apparently everywhere except in the place where we see and feel them" (Strong, p. 310). As I explained in my book on the *External World* (which, however, laid too little stress on relativity), we have to start with a private space-time for each percipient, and generally for each piece of matter. The correlation of these with the constructed public space-time is a long piece of work, but obviously feasible. The "place where a particular is" is ambiguous; it may mean the place where it is in its perspective, or the place where it is in the system which is the physical thing of which it is a member, or the place where this thing is in public space-time. When these distinctions are borne in mind, Mr. Strong's paradox disappears. The quotation from Einstein with which I began shows that my view is in harmony with modern physics.

Mr. Strong next objects to the similar paradox as regards time, namely that the moment in public time to which an occurrence is to be assigned is earlier than the various moments in public time to which are to be assigned the particulars which are members (or "appearances") of the occurrence at various places. The answer here is essentially the same as before. Public time is a convention, which may be fixed in many equally legitimate ways; it may happen that A is before B according to one legitimate convention, while according to another B is before A. All this is already in the special theory of relativity. One need not therefore treat the time-order of events with any undue respect.

One more point: "We may draw one inference from these paradoxes, and that is that the object, as physical science conceives it, is not correctly defined as the *system* of all the perspectives (even of the 'regular' ones, *i.e.*, those undistorted by the interviewing medium), but is rather their mathematical limit" (Strong, p. 311). I myself suggested this view in my book on the *External World*, but rejected it for the reason that there is no limit to which the appearances approach. For this reason, in *Analysis of Mind* (pp. 106-107), I defined a piece of matter as that set of appearances to which the set approximates which consists of a

given appearance together with all those others which would exist if the given appearance were regular. This is a limiting *set*, not a limiting single appearance, and it exists when the limiting single appearance does not. The device is essentially the same as that of defining an irrational number as a certain class of rationals. It must be understood that a "piece of matter" is not anything real, but merely some constructed object having properties which enable us to state shortly facts or laws concerning a whole set of particulars that are real. In defining a piece of matter, therefore, we are to be guided solely by convenience.

There are other points in Mr. Strong's article which I should like to deal with, but I think what I should have to say about them can be inferred by the reader from what I have already said. I will, therefore, close this discussion, which is already long enough, by expressing gratitude to Mr. Strong for having brought into prominence so many important points.

BERTRAND RUSSELL.

REJOINDER.

With all respect to Mr. Russell, I doubt whether molecular physics and the Einstein theory are relevant to the question. Perception on its physical side is a relation of the large-scale sort, like that by which an animal seeks food and avoids danger, is not injured by poisons that are outside his body, does not hear a sound that is too far away or too faint, and does not see in the dark, despite the emanations from objects. In short, there is a clear distinction between the organism and its environment, and Mr. Russell must not use relativity to undermine the foundations of biology.

I agree with him in more respects than he, through having misread (the fault, I am sure, is mine) a sentence that was meant ironically, imagines. I do not deny that we can "go beyond our sensations"—on the contrary, that is just what I assert, against Mr. Russell (when he says that the thing of common sense is "an unnecessary hypothesis"). But I agree with him that a sensation is not *intrinsically* self-transcendent or knowing, and that it is not immediately known; I agree with him that perception rests on a purely physical relation; and my aim, like his, is to bring nature and the self together into one single science which shall be like physics. But I do not believe that perception is a purely physical relation—I believe that it is one of significance; and (here I come to the vital issue between us) I hold that the "core of sensation"—quite apart from the images—*serves as the sign of*, and is the part of the self that enables us to know, what Mr. Russell would call the rest of the object outside the body, and what I call the object.

(1) Though objects consist of groups of electrons, it is not the mere radiations of the electrons that enable us to perceive. In the first place these radiations, after they reach the brain, are not a part of the object, and it is a misuse of language to say that a table, when I see it, is partly in my brain, or that a star which has been extinguished, but rays of light from which continue to reach my eyes, still partly exists. Yet this is the device by which Mr. Russell and Mr. Whitehead would satisfy common sense, and include colours and other secondary qualities in the object. In the second place Mr. Russell (fortunately for him) recognises that the sensation is tied to and varies with the brain, and this recognition (unusual, I think, with neo-realists) has put him in a difficult position. If he would not admit the 'miracle of knowing' (which is not a miracle at all), he must (in his physics, not in his philosophy)

bring the object bodily into the brain. In truth, an object perceived is no more in the brain than one seen in a mirror is really in the mirror—in fact the one kind of in-being is exactly like the other.

(2) Mr. Russell has slipped too easily out of my difficulty about the lens. The intra-cerebral effects due to radiations from an object, like the image on the retina, form a 'perspective' (if you mean by that a flat picture, or something whose hitherward end is a flat picture); but they do so because the parts of the brain-process are arranged in the same way as the parts of the object, and this is impossible without a lens. The radiations outside the body have no perspective form; they are mere effects, and effects lost in a synthesis with other effects; to say that they are perspectives is as if you said that a block of marble consists of statues. Thus Mr. Russell's plan for securing the continued existence, I do not say of objects (for the effects do exist continuously), but of 'perspectives,' comes to naught. There are no actual perspectives except when some one perceives.

(3) It follows from this that there can be only one perspective in the brain at a time. This perspective is not lodged in a point, but in an extended field, an area. It is not true, then, that at a neighbouring point in the brain there is another actual perspective; other actual perspectives are got, not by moving to another point in the brain, but by moving the brain to another point—exactly as if it were a camera.

(4) Mr. Russell's perspectives are of course not really in the brain—they are merely dependent upon it; and they are not flat pictures merely, but *views*. Now that which makes the difference between a flat picture and such a view (apart from the physical character of the one and the, shall we say, metaphysical character of the other) is the depth. And it is only the length and breadth in the perspective that are immediately tied to the process in the brain; the depth depends on the adjustment of the optical muscles and the way in which we react. Moreover, I think it is a fact of observation that depth is not sensible in the same way, the same *visual* way, that length and breadth are—depth is not coloured. These are the facts that seem to me to justify the view that the *visual sensation* has only length and breadth.

(5) A lower animal, with visual sensations but whom we may suppose to be without images, refers the sensation to the outer object by the way in which he reacts; and reposes in the reality of the object something which we may call instinctive *trust*. So long as he does that, the vision of the object, what I have called the view, appears to him; but if he should drop his outwardly directed attitude, he would be left with the mere flat picture, the sensation. But suppose he should say to himself—while always *acting* as if he saw something external—that theoretically, and as a matter of economy of assumptions, the object was "an unnecessary hypothesis": he would now have remaining, not the sensation, but the view or 'perspective'.

If, now, this philosophic animal supposes views to exist when nobody has them, and to be as numerous as physical points, he will be a sort of neo-realist, and his philosophy may be described as comminuted Leibniz. But perspectives, in this sense, are not as numerous as physical points, they are only as numerous as actual brain processes; they do not exist actually when no one is seeing, but only as possibilities; and perception in truth is a function belonging only to animals, not, as Leibniz thought, to every particle of matter. If, recognising these things, our philosopher contents himself, apart from his own actual perspective, with other perspectives that are mere possibilities, but conceives the perspective as something that is at once an appearance and a sensation, a view and a picture, his 'perceptions' will have changed from those of Leibniz to those of Hume. If, again, he clears the appearance of its confusion with the sensation, and squarely throws the external world overboard, interpreting it as his own egoistic creation, his one perspective will be not less atomic, but it will be that of Fichte.

But suppose he recovers some measure of his original *trust* in the external—perhaps through the consideration that other people's sensations are outside his own. Economy would now dictate that he should stop short with sensations—I mean with that external thing which he looks back at when he apprehends a sensation. Since it is at least certain that there is a sensation somehow tied to his own brain-process, which is necessarily external to the mind of an anatomist viewing that brain-process, he may not unnaturally conclude that what the anatomist sees is the sensation, and then, by analogy, that so perhaps objects and events external to himself are in their inner nature sensations, or like sensations: and the philosophy that results will be that of Fechner and Clifford. It seems to me that the direction in which Mr. Russell and his relativist friends are tending is this last.¹

C. A. STRONG.

¹ See Eddington, *Space, Time and Gravitation*, p. 192.

SOME REMARKS ON RELATIVITY.

PROBABLY, by now, even philosophers have had enough of relativity, but perhaps a few remarks on Miss Wrinch's discussion of the Methodology of Relativity (MIND, April, p. 200) may be of interest; and also in this connexion I should like to point out—in a few words—what seems to me to be a grievous logical error in the theory of relations as expounded by some of Einstein's philosophical followers.

As Miss Wrinch points out, "there are now various different views of the characteristics of space" (and Time?) "held by different writers on Relativity," but "there is still something of fundamental importance in their treatment of the notion of Space" (and Time). In the second paragraph of her article this common fundamental point is expressed by saying that "There is nothing in the External World to which we can point as being represented by the symbol for space". We may express this by saying that while the words "Space" and "Time" have meaning, they do not denote objects. According to the Absolute Theory, however, Space and Time are real existent bodies or series of points and moments; physical objects are related to Space and to Time, and Space and Time are related to physical objects, for example things are *in* Space, or occur *at* the same moment and so on; and in general the various spatial and temporal relations contain reference to points of space or moments of time.

With the Relative theory all these points and moments are swept away. Spatial and temporal relations hold directly between physical objects and their full and complete analysis contains no mention of points of Space or moments of Time or any object that might be called Space or Time; in the analysis of spatial relations Einstein regards Space as an unperceived, unreal and unnecessary *tertium quid*. With this theory, propositions like '*a* is in Time' simply mean '*a* is before, simultaneous or after something,' i.e., '*a* is temporally related,' '*b* is in Space' means '*b* is spatially related to something'. This is a general characteristic of the treatment of Space and Time by Einstein and his followers and I think it is the one to which Miss Wrinch wishes to draw our attention, but I demur from her assertion that—in the language of Modern Logic¹—"it consists in using Space as a description".

(a) It is more correct to say that it consists in using "Space"

¹ The language of modern logic seems at the moment to be the language of the *Principia Mathematica*.

as an 'incomplete symbol'. "Incomplete symbol" is a rather unhappy phrase, it would be better to speak of "disappearing symbols". An incomplete symbol may be defined as one such that if it occurs in the common expression of any proposition p it does not occur in the logical analysis of p , that is in the determinate and logically accurate expression of p .¹ Thus an incomplete symbol appears in the expression of ordinary thought and even in the abbreviations of logic, but disappears from the full expression of precise and accurate thought. And this is exactly what happens to the symbols "Space" and "Time" in the *formulations* of the theories of relativity. The words "Space" and "Time" may occur in writings *about* the theory of relativity but not in the precise and accurate formulation of the theory itself.

(b) The truth about "Space" being a description seems clear. The actual word "Space" is not used as a description either by the supporters of the Absolute or the Relative theory, but both parties use spatial relations as descriptions or as parts of descriptions. For the upholders of Absolute space the word "Space" denotes a real object or set of points and for their opponents the word is a disappearing symbol, that is so far as they speak with logical precision they do not use it at all. But spatial relations,—or rather the symbols expressing spatial relations, are used as parts of descriptions by both parties.

Consider the examples given by Miss Wrinch. "The building on my right is loftier than that." The symbol "The building on my right" is a description, whatever may be the true theory of Space or the true nature of the relation 'To the right of'.

Similarly "Equiangular triangles are equilateral" is a proposition analysable into the form—

$$(x) . f(x) . \supset . g(x)$$

with either the Relative or the Absolute theory.

Hence we cannot capture the *distinctive* characteristic of the relative theory by saying that it uses Space or spatial relations as descriptions.

Perhaps these two points can be exemplified and made clearer by considering the last two sentences of Miss Wrinch's discussion; they are "But whichever part of the general investigation is being undertaken, not in the case of any one of them is it significant to ask 'What is Space'. It is the properties and not the intrinsic nature of space which is the subject of investigation."

Discussing the latter sentence first, it should be rejected for the reason that any investigation of the predicates of an object involves an investigation of its qualities and this is the same as an investigation of its intrinsic nature. It is more correct to say that with the Theory of Relativity the subject of investigation is not space or time but the spatial and temporal properties of *objects*, for space

¹ This at least is the sense in which Russell uses it when he speaks of a class as an incomplete symbol.

and time are mere symbols which disappear when we speak with logical precision. This is the reason why, for the theory of relativity, it is never significant to ask "What is Space (or Time)?" For the symbols "space" and "time" can never be put in any really precise proposition.¹ They are in fact disappearing symbols.

Another point which seems worthy of careful consideration may be briefly expressed by saying that Einstein and some of his followers use the words that are used to denote spatial and temporal relations, in an ambiguous manner. Let me explain this by Einstein's use of the word "Simultaneous" as defined by him in his *Theory of Relativity*, Chapter VIII. In that chapter Einstein points out that the ordinary use of the word Simultaneous is of no use to Physics except when used as connecting two objects which can be observed together. To overcome this difficulty he gives a definition of the way he proposes to use the word. His use of the word may be provisionally defined like this. Consider two flashes of lightning F_1 and F_2 : then we define F_1 as being simultaneous to F_2 if the crests of the light waves radiating from F_1 and F_2 reach some observer O situated at M the middle point of the line $F_1 F_2$, simultaneously. Now if we carefully consider this definition we see that it uses the word "simultaneous" in two quite distinct and different ways. Let us call these two relations 'primary simultaneity' and 'secondary simultaneity'. The former represents the ordinary use of the word simultaneous, the latter Einstein's use. We may now somewhat emend our definition and say F_1 and F_2 are secondarily simultaneous when the crests of the light waves radiating from them reach the observer O primarily simultaneously.² This shows that primary and secondary simultaneity are quite different relations. Primary simultaneity is a simple unanalysable relation, symmetrical and transitive. Secondary simultaneity is a complex relation analysable in the way that Uncle and Grandfather are analysable, *i.e.*, it consists in being related to a term or terms standing in between the two related by the relation in question. In this case the relation of F_1 to F_2 consists in F_1 having the relation of 'radiating' to a certain wave crest of light say c_1 , c_1 having the relation of 'primary simultaneity' to another wave crest of light c_2 , and c_2 being 'radiated by' F_2 . The importance of this distinction between primary and secondary simultaneity is simply that, if the above is correct, then it disposes—once and for all—of the assertion that Einstein has proved *all* spatial and temporal relations to be relative. Primary simultaneity is *not* a relative relation, things either are or are not primarily

¹ This is not a contradiction. In this sentence the symbol "space" is used to denote the symbol "space," *i.e.*, the actual word "space" and not something beyond the symbol. It is, of course, only when "space" is used in its usual sense that it is a disappearing symbol.

² Further qualifications are still required to make this definition precise, they will be considered further on.

simultaneous, without any further qualification whatsoever. We may go a little further in our opposition to some philosophical writers on relativity; but first let us make our definition somewhat more accurate, although it will still be provisional. The aim and spirit of Einstein's definitions is expressed by his dictum, "The concept does not exist for the physicist until he has the possibility of discovering whether or not it is fulfilled in an actual case".¹ Thus instead of setting out on the perhaps impossible task of finding some instrument for telling whether physical objects are or are not primarily simultaneous, he constructs the relation secondary simultaneity of such a nature that we can tell whether objects are or are not secondarily simultaneous with the senses and instruments at our disposal. Now it will be admitted that we do not observe light waves but the sense-data or *sensa* caused by the impinging of the light waves on the eye and we may agree that the sense-data are primarily simultaneous with the actual striking of the wave on the eye. Thus, keeping to Einstein's dictum, those objects which must be primarily simultaneous in order for F_1 and F_2 to be secondarily simultaneous will be objects which we can observe; they will therefore be two sense-data of F_1 and F_2 ; and our definition will now read, F_1 and F_2 are secondarily simultaneous when the two sense-data s_1 and s_2 , 'of' or 'manifested by' F_1 and F_2 respectively and observed by the observer O at the middle point M , are primarily simultaneous. Similar definitions may be given for secondarily before and after.

Now while agreeing with Einstein that we have no means of telling whether physical objects—as distinct from sense-data—are primarily before, simultaneous or after each other, it by no means follows that they are not related by these relations; and although these relations may not exist for the physicist (as connecting physical objects; for they do exist, even for the physicist, when connecting sense-data) they do exist for the philosopher.

The theory of relativity ignores the relations of primarily before, simultaneous and after except when holding between sense-data and by dealing with the corresponding secondary relations it has achieved some most important and valuable results, but this does not prove that the ignored relations do not exist. Thus despite all the asseverations to the contrary, it is still possible to maintain that every object is related by an absolute temporal relation to every other object, although in many cases it is impossible to tell whether an object is primarily before, simultaneous with or after another specified object.

It may be interesting, and may perhaps further elucidate the difference between primary and secondary simultaneity, to consider, from a logical point of view, what is meant by saying that secondary simultaneity is a relative relation, and how it happens that it is a relative relation. We have seen that when Einstein says ' F_1 is simultaneous to F_2 ' he ought to say ' F_1 is secondarily

¹ *Theory of Relativity*, p. 22.

simultaneous to F_2 '; and by this he means that two crests of light-waves radiated by F_1 and F_2 are primarily simultaneous, or more correctly that two of the sense-data S_1 and S_2 manifested by F_1 and F_2 are primarily simultaneous; and he must then definitely specify S_1 and S_2 out of the many sense-data manifested by F_1 and F_2 . " F_1 is secondarily simultaneous to F_2 " means therefore that a certain pair of the sense-data manifested by F_1 and F_2 are primarily simultaneous; but unless we specify *which* pair, the assertion remains ambiguous and indeterminate, for there is a very large, if not an infinite, number of pairs of sense-data manifested by F_1 and F_2 that are or could be observed by persons situated around F_1 and F_2 . Einstein restricts the range of pairs of sense-data by framing his definition so that F_1 is secondarily simultaneous to F_2 when the pair of sense-data, manifested by F_1 and F_2 and observed by a person situated on the plane passing through the middle point of the line $F_1 F_2$ and at right angles to it, are primarily simultaneous. This however is still indeterminate, and the whole of the relativity of simultaneity results from the indeterminateness of this definition. With this indeterminate definition the assertion that F_1 is secondarily simultaneous to F_2 is equivalent to saying that a pair of sense-data are primarily simultaneous; but this pair of sense-data is not uniquely specified, being merely specified as one pair out of a class of pairs. The assertion ' F_1 is secondarily simultaneous to F_2 ' is really about four terms, F_1 , F_2 and two sense-data; but while it uniquely specifies F_1 and F_2 it does not uniquely specify the sense-data. Assertions of this type may be called relative, if, when you qualify the assertion and in doing so uniquely specify the objects otherwise not uniquely specified, some qualifications make the complete assertion true and some false. This is exactly what happens with ' F_1 is secondarily simultaneous to F_2 '. The qualifications such as 'from such a point of view,' 'as measured from such a reference body,' etc., serve to specify the sense-data of F_1 and F_2 of which we are speaking. As is easily seen, because of the constant but finite velocity of light, if some of these qualifications give a true assertion then some others will give a false assertion. The proposition F_1 is secondarily simultaneous to F_2 may be compared with the proposition ' P is highly probable'. Both are really only half propositions. The former is about four objects F_1 , F_2 and two light waves, or more correctly, F_1 , F_2 and two sense-data, but only specifies half the objects, i.e., F_1 and F_2 ; the latter is about p and a certain body of knowledge, but only specifies p .

This account of the relativity of simultaneity has been much longer than I intended, but if it is correct it shows, (1) that there are two meanings given to the word "simultaneous" as used by relativists and that only with one meaning is simultaneity relative. (2) That the relativity of simultaneity (a) gives the same amount of support to the theory of the Relativity of truth as is given by the relativity of propositions like ' P is highly probable,' which is no support at

all; (b) has nothing at all to do with the activity of minds. The qualifications 'for that observer,' 'as measured by so and so,' do not mean that the proposition " F_1 is simultaneous to F_2 ," is true for one person and false for another; as it stands unqualified it is really only half a proposition and is neither true nor false, the qualifications are only ways of completing it, and the reference to the observer is merely a way of uniquely specifying the two light waves or sense-data involved in F_1 being simultaneous to F_2 : any other way of uniquely specifying these two light waves or sense-data would serve equally well.

(3) As regards subjectivity: (a) If we only loosely follow Einstein's dictum 'That a relation is not to be used unless we have a possibility of telling whether it holds in any actual case,' we can state the relativity of simultaneity for a world without minds or anything mental at all; (b) if we strictly follow the above dictum then science is forced to recognise that we do not observe physical objects but only the sense-data of physical objects. This may be a new truth for science, but it is not new to philosophy; see for example Mr. Russell's article on 'The relation of sense-data to physics,' published in 1914.

All the above arguments only apply to simultaneity, but I think they can be generalised to cover all the other relations dealt with by the theory of relativity. For example Dr. Wildon Carr in *MIND*, April, 1922, p. 177, says "... the straight line of every observer is curved for other observers." I suggest that he will find that such a proposition, if it occurs in the books of the relativists, does not mean that a line is both straight and curved, but rather something like this: "If the projection of a moving point on a plane P_1 is a straight line, then its projection on another plane P_2 where P_2 moves relative to P_1 , is a curved line," or "If the appearances (*i.e.*, the sense-data) of a moving point from one body are straight, then the appearances from another body are curved". And in general in all such propositions there is a multiplicity of objects concealed by the brevity of expression.

The general conclusion of these remarks is that the theory of relativity from the point of view of philosophy would be more appropriately called the theory of half-propositions; that it has proved certain complex relations to be relative but that the relations usually denoted by the words "simultaneous," "before," "after," "straight," "curved," etc., are not relative; that we can only tell whether objects have these non-relative predicates when they are objects of immediate awareness, *i.e.*, sense-data; and that science is beginning to realise that we only observe the sense-data of physical objects, a view which is not new to philosophy.

The following flight of imagination may be of interest to philosophers and even to physicists.

"Once upon a time there was an earth inhabited by a race of men, all totally blind. Their distance perception depended on sound. In the course of time there arose an Einstein, blind, but

of infinite genius, and he propounded a theory of relativity. This theory was exactly the same as the modern theory of relativity except that where we say 'light' they said 'sound'. With this theory they proved many strange results; for example nothing could travel faster than sound. And using this theory two philosophers proved that all truth was relative. Yet it was absolutely true that mind alone was real; there was no substratum of any kind in nature; the monads alone supplied everything; and step by step the Hegelian dialectic carried the Universe into higher and higher degrees of truth and spiritual reality.

"But God smiled; and when He saw that man had become perfect in optimism and credulity, He sent another earth through the sky, which crashed into the blind men's earth; and all again returned to nebula.¹

"For the truth of relativity was itself only relative, it related only to a small selection of temporal and spatial relations; and there was much in their world that was neither man-made nor man-measured but moved by the unmotivated forces of nature."

Whether this is a true analogue of the modern theory of relativity I am neither sufficient philosopher nor physicist to decide. But it would be well if it were so; for who, having compared the idealism of the 'Reign of relativity' with the realism of 'The Dynasts,' will not agree that the latter rings more true?

R. AINSCOUGH.

¹ Adapted from the story told to Dr. Faustus, as related in "The Free Man's Worship".

VI.—CRITICAL NOTICES.

Logic, Part II. (Demonstrative Inference). By W. E. JOHNSON.
Cambridge University Press, 1922. Pp. xx, 258.

THE second volume of Mr. Johnson's great work on *Logic* deals with demonstrative inference, deductive and inductive. It is perhaps even more interesting than the first volume, on account of the extreme practical importance of its main subject, and also on account of the digressions on such matters as Magnitude and Symbolism. It covers the whole range of mathematical reasoning, and it also deals with those types of argument which Mill tried, not too successfully, to classify in his *Inductive Methods*. Incidentally it contains almost the only good criticism that has yet appeared on a number of fundamental, but rather technical, points in Russell's *Principles of Mathematics*.

The work opens with an Introduction, which clears up certain points in vol. i., and restates Mill's criticisms on the syllogism in terms of the distinction between Epistemic and Constitutive Conditions, which was drawn in the first part.

Chapter i. discusses the general nature of inference, and its connexion with implication. Mr. Johnson says that implication is "potential inference," and holds that, although implication and inference are distinct, neither of them can be understood except in terms of the other. He thinks that it follows from this that we ought rather to say "*p would imply q*" than "*p implies q*," and he actually adopts this mode of statement throughout the book. It seems to me that this is not true, and that it does not follow from the identification of implication with potential inference. If implication is potential inference, we ought no doubt to say "*p would justify you in inferring q* (if you knew that *p* was true)," whenever *p* does imply *q*. But I cannot see why this should make us introduce the potentiality into the statement about implication, and say that *p would imply q* rather than that *p does imply q*. To take an analogy. We might say that "threatening" is "potential injuring". But this does not mean that we ought to confine ourselves to statements like "A would threaten B". On the contrary we say that "A does threaten B" whenever it is true that "A would injure B (if he could)". This criticism is not merely verbal, as may be seen from the following examples. I should say: (1) MaP and SaM do imply SaP; (2) MaP would imply SaP (if the premise SaM were added); and (3) MaP would not imply SeP under

any circumstances (because there would be illicit process of P). Now I do not see how (1) and (2), which are clearly different, could be distinguished in Mr. Johnson's terminology, since he would have to put (1) in the form "MaP and SaM would imply SaP". The phrase "would imply" seems only to be appropriate to cases like (2); and, if it be used for cases like (1), we are left with no appropriate expression for the former.

It is implied in ch. i. and definitely asserted in ch. ii, p. 30, that "there is no single relation properly called *the* relation of implication". What Mr. Johnson means is that to say that *p* implies *q* is simply to say that *q* could be inferred from *p*, and that this is true when and only when one or other of several specific types of formal relation hold between *p* and *q*. In ch. i., § 4, Mr. Johnson says that there are two fundamental relations between *p* and *q*, which justify inference from the former to the latter. These relations are formulated by him in two Principles of Inference, the *Applicative* and the *Implicative*. The *Applicative* Principle states that, if *p* be of the form *All S is P*, and *q* be of the form *The given S is P*, then *q* can be inferred from *p*. The *Implicative* Principle states that if *p* be a compound proposition of the form (*x* and (*x* implies *y*)) whilst *q* is of the form *y*, then *q* can be inferred from *p*. All deductive inference rests on these two principles; and, therefore, I take it, all implication depends on one or other of the two types of relation mentioned in these principles.

There is no particular difficulty about the *Applicative* Principle, but there is a question to be raised about the *Implicative* Principle. This professes to state one of the types of relation which must hold between *p* and *q* if *p* is to imply *q*. But it presupposes that *p* itself already contains two propositions *x* and *y*, of which the former implies the latter. The question at once arises: Of what nature is the relation between *x* and *y*, in virtue of which *x* implies *y*? If there be just two relations—the *Applicative* and the *Implicative*—which give rise to implication, it would seem that the implication which is involved in the very statement of the *Implicative* Principle must itself rest on either the *Applicative* or the *Implicative* relation. If this be so, I do not see how the *Implicative* Principle can be taken as expressing one of the two fundamental types of relation on which implication depends. It would seem that the implication which is involved in the *Implicative* Principle must at last rest on the *Applicative* Relation, on pain of an infinite regress. If so, the *Applicative* Principle is more fundamental than the *Implicative* Principle.

In ch. ii., § 3, p. 30, Mr. Johnson attempts a more accurate statement of the *Implicative* Principle, but it does not meet the difficulty that I have just pointed out. He there reformulates the principle as follows: "There are certain specifiable relations such that, when one or other of these subsists between two propositions, we may validly infer the one from the other". It is, I think, perfectly clear that this is *not* a reformulation of the *Implicative*

Principle, as originally stated on p. 11, and that it is not consistent with the statement on p. 10, that the Implicative Principle expresses one of the "two fundamental relations which will render the inference from p to q . . . formally valid." To say that *there are some* relations which will render the inference valid is not to state *one of the two* fundamental relations which justify inference. In fact it is obvious that the Implicative Principle in its second formulation would be true if implication rested on no other relation beside that mentioned by the Applicative Principle.

There is thus certainly some inconsistency in Mr. Johnson's language, and I am a good deal puzzled both as to what he really means and as to what is the truth of the matter. I would tentatively offer the following suggestions. (1) The Applicative Principle really does state one fundamental type of relation between two propositions, such that, whenever it holds, the former implies the latter. (2) If you grant the Applicative Principle, the Implicative Principle, in Mr. Johnson's second formulation, immediately follows. This is sufficient to show that the second formulation does not adequately express what Mr. Johnson means by the Implicative Principle; for he certainly understands by it something which is parallel to and independent of the Applicative Principle. (3) The Implicative Principle, as originally formulated, does express one of the relations on which implication rests. But it only applies to the special case where one of the propositions is a complex, one of whose parts itself involves an implication. And this implication must in the end presumably rest on some other type of formal relation than that which is formulated in the Implicative Principle. If it were true that there are only two fundamental types of relation which generate implications, it would seem that the Applicative relation must be more fundamental than the Implicative, in the sense that the implication which is involved in the premise to which the Implicative Principle is applicable must ultimately rest on the Applicative relation. But I do not know why there should not be *many* different formal relations which give rise to implications. And, although Mr. Johnson seems to hold on p. 10 that there are only two, he seems to make no such restriction on p. 30. (4) In fact I take it that there are many independent formal relations which generate implications. *E.g.*, if p has the form P , and q has the form $(P \text{ or } Q)$ they are so related that p implies q . And this depends neither on the Applicative nor on the Implicative Principle. What then is the *special* importance of the Applicative and Implicative Principles? (5) It seems to me that their great importance is as *generative* principles. It is by them, and by them alone, that we can deduce chains of new truths from a few suitable primitive propositions. The primitive propositions state certain independent and immediately obvious formal implications, like p implies $(p \text{ or } q)$. These give us premises of the kind to which the Implicative Principle can be applied. Again the Applicative Principle allows us to substitute what Mr.

Johnson calls "connected complexes" for the simple terms in the primitive propositions, and thus to reach new truths by what he calls "functional deduction". If we read a work like *Principia Mathematica*, we see that, once the primitive propositions have been laid down, all further progress is made by repeated use of these two principles. Mr. Johnson is therefore justified in the importance which he ascribes to them, though, as I have said, some of the statements which he makes about them seem to me puzzling, and at least verbally inconsistent.

Mr. Johnson next makes some very interesting observations on the applicational and the implicational forms of inference. As an example of a purely applicational argument he takes such an example as: "All propositions have predicates, therefore *Matter exists* has a predicate". Now the question arises: Is there not a suppressed premise, *viz.*, "*Matter exists* is a proposition"; and is not the argument therefore a syllogism, which Mr. Johnson regards as involving both the applicative and the implicative principles? To this he answers that the supposed premise is really, from the very nature of the case, superfluous. We cannot attach any meaning to the phrase *Matter exists* unless we know that it is a proposition, and it is therefore superfluous to state that it is a proposition. Mr. Johnson makes two statements about such propositions which are verbally inconsistent. On p. 14 he says that they are not genuine propositions. At the foot of the same page he says that they are propositions of a peculiar kind, which he proposes to call *structural*. A structural proposition is not simply verbal, for it is not about words. What it does is to assert a general category of the subject. But it does not add to our knowledge, because the subject has to be given to us under this general category before we can specify it at all in a judgment. A category is a determinable or set of determinables, and all judgment consists of specifying the determinate forms in which a subject exhibits those determinables under which it must be given to us if we are to be able to think of it at all. When a superfluous premise is added to convert a purely applicative argument into a syllogism, Mr. Johnson calls the premise a *sub-minor*.

We can now understand Mr. Johnson's analysis of the ordinary subsumptive syllogism. Take the syllogism: "All equilateral triangles are equiangular, the triangle ABC is equilateral, therefore it is equiangular". Mr. Johnson would analyse this somewhat as follows:—

Everything with sides and angles (M, P) is equiangular (*p*) if equilateral (*m*).

Therefore the triangle ABC is equiangular (*p*) if equilateral (*m*). (Applicative Principle.)

The triangle ABC is equilateral (*m*).

Therefore the triangle ABC is equiangular. (Implicative Principle.)

Here M and P are the determinables under which the object in

question is given. The major states an universal connexion between one determinate under M and one determinate under P. No premise of the form "The triangle ABC has sides and angles" is needed, for such a proposition is merely structural.

Mr. Johnson points out that it is possible to make a really implicative argument look applicative by introducing a superfluous major, just as it is possible to make a really applicative argument look implicative by introducing a superfluous minor. This would happen if you were to take the formal Barbara (MaP. SaM implies SaP) as a *premise* in some particular argument in Barbara. There is a positive inconsistency in doing this, for the principle of the syllogism in Barbara states that the premises of Barbara are by themselves *sufficient* to justify the conclusion, and you stultify this if you introduce the principle itself as a *further* premise.

The remaining point to notice in this chapter is Mr. Johnson's clear distinction between the constitutive and the epistemic conditions of valid inference. The constitutive condition is that the premises shall *be* true and shall *imply* the conclusion. The epistemic condition is that you shall be able to *know* that the premises are true and that they imply the conclusion without having to *know* beforehand that the conclusion is true. It is clear that in a great many cases, *e.g.*, where the major is proved by induction, or is self-evident, or is accepted on authority, and where the formal connexion between it and the conclusion can be intuited, these conditions are fulfilled.

We may take chapters ii. and viii. together, for they introduce us to the unusually extended sense in which Mr. Johnson uses the term *induction*. The Applicative and Implicative Principles assume that we have already got a number of universal premises to work with. How do we get these? Always by something of the nature of induction, according to Mr. Johnson. Now this might at first make the reader think that Mr. Johnson is an empiricist; but this is far from being so. We do not start by seeing axioms in their generality, we get to know them by reflecting on particular instances. The process by which this happens is called *Intuitive Induction*. Mr. Johnson defines Induction in ch. viii., as a process by which we start from certain instantial premises and reach a conclusion which is a generalisation of *these premises*. (It would not be enough to say that the conclusion is wider than the least wide of the premises, for, as we shall see, Mr. Johnson holds that many purely deductive arguments have this characteristic.)

Now I think that this definition of induction would generally be accepted. And it is certain that the process of seeing an axiom by reflecting on particular instances of it answers to this definition, if it be a process of inference at all. Hence Mr. Johnson is quite consistent in saying that all principles and major premises are ultimately reached by some kind of induction. And it does not make him an empiricist, for an empiricist would hold that they are all reached by that particular kind of induction which Mr. Johnson

calls *Problematic*. Problematic induction leads only to probable conclusions, needs special axioms or postulates, and is left to be treated in the next volume. But there are three processes of inference which answer to the definition of induction, lead to conclusions which are as certain as their premises, and are treated in the present volume. These are Intuitive, Summary, and Demonstrative Induction; and it is the first of these which establishes the fundamental principles of inference themselves, and the self-evident axioms which form the major premises of pure logic, mathematics, etc.

Mr. Johnson distinguishes two principles of Intuitive Induction which he calls the *Counter-applicative* and the *Counter-implicative* Principles. The first may be stated as follows: "Sometimes we can see that what is true of this instance is true of any other instance, and then we can be sure that it is true of all instances". The second can be stated as follows: "Sometimes when we have made a particular inference which is valid we can see that its validity is due to a certain type of formal relation which holds between premise and conclusion". I can then conclude by the Counter-Applicative Principle that any argument of this form will be valid. These principles cannot be formulated so that we can safely use them blindly, as we often can the direct Applicative and Implicative Principles. Insight into the special subject matter which forms our instances is necessary.

In ch. ii. we are given a very useful division of propositions into a hierarchy, which I will now exemplify. We have (1) Supreme principles of inference, such as the Applicative, Counter-applicative, etc. (2) (a) Formal axioms, such as *p implies q-or-p*. (b) Formal propositions deduced from these axioms by the deductive principles in (1), e.g., *if q implies r then p-implies-q implies p-implies-r*. (3) (a) Particular instances of (2a), from which (2a) are derived by principles of intuitive induction contained in (1), e.g., *Jones is a knave implies (Brown is a fool)-or-(Jones is a knave)*. (3) (b) Particular instances of (2b), e.g., the particular syllogism in Barbara to prove that George V is mortal. (3b)-propositions follow from the corresponding (3a)-propositions by the Applicative Principle. The dividing line between (2a) and (2b) is not of course perfectly sharp, since different propositions are taken as axioms in different systems. (4) (a) Experientially certified propositions, like *This patch is red*. (4) (b) Deductions from these made in accordance with the axioms and principles of the higher levels. The distinction between the two sub-groups here is again not sharp, because no two people are agreed as to precisely what is certified by mere sense-experience and what is inferred from it.

Chapter iii. deals with Symbolism and Functions, and is far the best account that I know of these subjects. It contains a severe criticism on the inconsistencies of Mr. Russell's account of propositional functions. Mr. Johnson begins by dividing symbols into *shorthand* and *illustrative*. The former are simply abbreviations

for words like *and*, *or*, *implies*, etc. They stand for formal or logical entities and may be called *formal constants*. This means that they have precisely the same significance wherever they occur, and that this significance is part of the subject matter of pure logic. The word *white*, or any shorthand symbol that we might use for it, is a *material constant*. That is, it is the name of a certain definite entity which does not belong to the subject matter of pure logic. Certain shorthand symbols might, for all we know at the outset, be either material or formal. The figure 2 would be an example. We might reasonably think that it was a material constant, like *white*, but it turns out to be formal if we accept Russell's and Whitehead's proof that arithmetic contains no fundamental concepts which do not belong to pure logic.

Illustrative symbols are the P's and Q's, x's and y's, of formal logic and algebra. Mr. Johnson calls such symbols *variables*. It will be noticed that he confines the names *constant* and *variable* to words and symbols, and does not apply them to what these denote. According to him, illustrative symbols are singular names of a peculiar kind. Their peculiarity is that they "stand for" any one of a whole set of ordinary singular names. Thus in "*x* is mortal" the symbol *x* stands indifferently for the names "Socrates," "Plato," "The Man in the Iron Mask," and all other names (say) of persons. There seems to me to be a verbal inconsistency in Mr. Johnson's statements on this point. After saying that *s* in "*s* is *p*" stands for any substantive-name, he goes on to say (p. 60) that "*p* stands for any one indifferently assignable adjective comprised (say) in the class *colour*". It is clear that he here means *adjective* and not *adjective-name*; for the adjective-name "red" is not comprised in the class *colour*, whilst the adjective red, which it denotes, is. Now it is clearly inconsistent to make the variable *s* stand for substantive-names and not substantives, whilst you make the variable *p* stand for *adjectives* and not adjective-names. I think the verbal confusion arises through the ambiguity of "standing-for," which sometimes means "acting as representative for" and sometimes means "denoting". *S* stands for the names "Socrates," etc., in the sense that it equally represents any one of them. *P* stands for the colours red, etc., in so far as it represents equally any one of a set of names each of which denotes a certain colour.

Variables are closely connected with functions, and functions according to Mr. Johnson are bound up with constructs. A function is the identity of form which can pervade many constructs constructed out of different terms. Thus *p-or-q* and *r-or-s* are two constructs out of *r* and *s*, *p* and *q*, respectively. And both exemplify the alternative function. The terms in a construct, for which substitutions may be made without changing the nature of the construct, are called *variants* by Mr. Johnson; and the illustrative symbols for variants are of course variables.

This definition of *function* is consistent with the sense in which

it is used in mathematics. Mr. Johnson has no difficulty in showing that Russell's various uses of the term *propositional function* are consistent neither with each other nor with the common usage. The whole of what Mr. Johnson says on this subject is well worth reading, and seems to me perfectly conclusive.

One other very interesting point in this chapter is Mr. Johnson's view that verbal phrases like *Smith-and-Brown* or *Smith-or-Brown* do not denote genuine logical constructs, whilst phrases like *white-and-hard* or *white-or-hard* do. The only apparent exception that I can think of would be propositions like "Smith and Brown are a couple," which clearly cannot be analysed into "Smith is a couple and Brown is a couple". But Mr. Johnson would no doubt meet this by his distinction between the conjunctive and the enumerative *and*.

Chapter iv. deals with the ordinary formal development of the syllogism. I need scarcely say that this is done as well as it could be done. There are just three points worth special mention. (1) Mr. Johnson criticises the ordinary method of reaching the valid moods by laying down rules and striking out the moods that conflict with them. He justly points out that this will not suffice to guarantee the validity of those that are left. For this a positive set of dicta is needed. These Mr. Johnson supplies. (2) In place of the by no means obvious rule that a negative conclusion needs a negative premise Mr. Johnson substitutes the proposition that three classes S, M, and P, can be co-extensive. As a matter of fact the rule in question is only needed to cut out the mood *PaM. MaS implies SoP*. To deny the validity of this is equivalent to saying that *SaP, MaS, and PaM* are consistent; and this is equivalent to Mr. Johnson's rule, as the reader can easily see for himself. (4) Mr. Johnson makes a practical remark which all who have to teach elementary logic will do well to bear in mind. In giving examples of syllogisms we should take care that our premises and our conclusions are neither obviously true nor obviously absurd. The former error will make our students confuse formal validity with material truth, the latter will make them think that the syllogism is a mere game. Mr. Johnson recommends examples from casuistry, economics, and politics, and supplies some amusing examples about the veracity of my Lord Grey, which he apparently regards as neither axiomatic nor obviously incredible.

Chapter v. deals with what he calls the *Functional Extension of the Syllogism*. Here the major is a numerical law of the form $P = f(M)$, e.g., the gas law. The minor is of the form: "In this case M has the value m ". The conclusion is: "In this case P has the value p , which = $f(m)$ ". (Where Mr. Johnson got his extraordinary expression for the gas law— $T = 239PV$ —is more than I can imagine.)

The rest of the chapter is mainly taken up with cases where we are given (say) P as a function of A, B, C, D, and we try to get (say) A as a function of P, B, C, D.

Chapter vi. is extremely important; for it deals, under the heading of *Functional Deduction*, with all the reasoning of pure mathematics, except that of Euclidean geometry, which Mr. Johnson considers to have certain peculiarities of its own. The premises of functional deductions are equations of the form $f(A,B,C) = \phi(A,B,C)$ for all values of the variables. The argument is applicative, and takes place by substituting *connected* complexes for simple variants in these functions. If for A you substitute $(x + y)$ and for B $(x - y)$, for instance, the two expressions would be connected constructs because of the common terms x and y in both. To take a very simple example; from the formula $(a + b)(a - b) = a^2 - b^2$ we derive the formula $4xy = (x + y)^2 - (x - y)^2$ by substituting for a and b respectively the connected complexes $(x + y)$ and $(x - y)$.

Mr. Johnson points out two important characteristics of this type of reasoning. (1) It is demonstrative, and yet can lead to conclusions which apply more widely than the premises, and (2) it is impossible to reduce it to syllogistic reasoning. As regards the first point his meaning is the following. Suppose you start with a premise that involves two distinct variants, A and B. Then, if A be susceptible of n values and B of m , it is clear that the formula covers mn cases. Now substitute for A and B respectively the two connected complexes $f_1(A,B,C)$ and $f_2(A,B,C)$, and suppose that C is susceptible of p values. We shall derive a general formula about A, B, and C which will cover mnp cases. If we are dealing with ordinary algebraical formulæ all our variables are supposed to be capable of representing any number, and so $m = n = p = 2^{\aleph_0}$, the number of the arithmetical continuum. In this case the actual number of cases to which the conclusion applies is the same as the number to which the premise applies; for $mnp = mn = m$, when we are dealing with transfinite cardinals. Nevertheless, it remains true that the cases covered by the conclusion contain all and more than all the cases covered by the premise; just as Space contains all and more than all the points on any straight line, although the cardinal number of points in a line is the same as that of the points in the whole of Space.

There is a point here which Mr. Johnson does not bring out explicitly. Suppose that your premise was a formula whose variants were definitely confined within a certain range of values, could you be sure that all substitutions of connected complexes would be valid? It seems to me that you could not. Suppose, e.g., that your premise was a formula about X and Y, and that the values of X were restricted to integers between 0 and 3, and the values of Y were restricted to integers between 2 and 5. Then any attempted argument which proposed to substitute $(X + Y)$ for X would break down. For the only possible values of $(X + Y)$ would be 4, 5, and 6, all of which lie outside the range of possible values for X. Thus the fact that the range of variation of all the variables in an algebraical formula is the whole number-continuum seems to be an

important condition of the general validity of this type of deduction.

The second peculiarity of functional deduction may be illustrated as follows. By purely syllogistic reasoning we could not prove anything about the numbers which are divisible by both 2 and 3, which is not also true of all numbers divisible by 2 and of all numbers divisible by 3. But by functional deduction we can prove properties which are true of this particular species of numbers and are not true of either of the genera to which it belongs.

The last point to notice in this chapter is the very severe criticism of Russell's *Principle of Abstraction*. Mr. Johnson agrees that Mr. Russell proves the proposition which goes under this name, provided we grant the reality of classes, which Russell himself afterwards attempts to deny. But he holds that the proposition which is proved is so tame as to be of no philosophical interest whatever. Mr. Johnson is no doubt right on both counts. But, as regards the first, I should think it would be quite easy for Russell to restate the Principle in terms of his "no-class" theory, for he does not get rid of classes and substitute *nothing whatever* for them. As regards the second, the criticism is perfectly valid against some applications which Russell made of the Principle in his hot youth. (I think I am doing him no injustice when I say that at one time he thought he had proved the absolute theory of time by the Principle of Abstraction.) But I presume that these were *péchés de jeunesse*, over which Mr. Russell would wish now to draw a veil.

Chapter vii. is a long and interesting one on the *Different Kinds of Magnitude*. I can only briefly indicate some of the more interesting points in it. The best previous treatment of the subject is of course in the *Principles of Mathematics*. (Mr. Johnson does not seem to be acquainted with the very difficult later theory of the *Principia*, which, so far as I know, no philosopher has yet dared to criticise or even mention.) Mr. Johnson differs a good deal from Mr. Russell. (1) He counts numbers as magnitudes. (2) He distinguishes them as *abstract* from *Concrete Magnitudes*, like lengths and temperatures. (3) He calls the latter *quantities*, whereas Russell confines this name to substances having magnitude, such as foot-rules. (4) He distinguishes between *extensional* wholes (classes), whose magnitudes are numbers, and *extensive* wholes, like areas and stretches of time. He brings out in a most admirable way the points of analogy and difference between the two. (5) He distinguishes between *distensive* and *intensive* magnitudes. The former seem to be degrees of difference, and their zero is identity. The zero of intensive magnitude is non-existence. (6) He holds a characteristic, and to my mind very doubtful, view that magnitudes of different kinds can be multiplied and divided by each other to give new kinds of magnitude, such as area and velocity. The more usual view of course is that it is only the numerical measures of the magnitudes that can be multiplied and divided. It seems to me that the following is an objection to Mr. Johnson's view. He

admits that only homogeneous magnitudes can be added. But multiplication is primarily repeated addition. It is therefore difficult to see that he can consistently hold that non-homogeneous magnitudes can literally be multiplied when they cannot literally be added.

The chapter contains a short, but most illuminating, discussion on the absolute and relative views of Space and Time. Mr. Johnson holds that two different controversies have been confused under this head. One is the question whether there are substantival entities of a peculiar kind (points and instants) between which spatial and temporal relations ultimately hold, or whether such relations hold directly between what would commonly be said to "occupy" points and instants. This might be called the *Substantival v. the Adjectival Theory* of Space and Time. Mr. Johnson inclines to the adjectival view, and dismisses points and instants as "substantival myths". The other question is whether position in space or time can only be defined in terms of relations. This is a question that could arise just as much on the substantival as on the adjectival view. I gather that Mr. Johnson inclines to the non-relational form of the adjectival theory. There is a third view, *viz.*, that points and instants are certain classes of events or objects. This has of course been greatly developed in recent times by Whitehead. I suppose we might say that this makes points and instants "adjectival" as well as "substantival myths". This view Mr. Johnson rejects with scorn, but I am not altogether persuaded by his arguments against it.

The rest of the book deals with all forms of Induction except the problematic kind. We have already seen the wide sense in which Mr. Johnson uses the term *Induction*, and have described Intuitive Induction. Chapter ix. treats of what he calls *Summary Induction*. This starts with the familiar "Perfect Induction," which, Mr. Johnson points out, can be reduced to syllogism. The remainder of the chapter deals with the establishment of Euclidean propositions by the use of figures. Purely analytical geometry proceeds wholly by functional deduction, but its axioms and therefore its conclusions are wholly hypothetical. In Euclidean geometry, according to Mr. Johnson, the axioms and propositions are asserted to be true of things in nature. We might have established enough axioms by summary induction from figures, and then have used nothing but functional deduction in our proofs. But this has not in fact been done; the explicit axioms of Euclid are not adequate to guarantee deductively all his conclusions, and that is why figures have to be used in geometrical proofs. At certain stages in the proofs summary inductions have to be made, and so a bad figure may lead to false conclusions. Mr. Johnson illustrates this last point very happily by a pleasing fallacious proof that all triangles are isosceles.

It remains to explain how Mr. Johnson supposes that summary induction establishes geometrical propositions from figures. The example that he gives is the establishment of the axiom that two

Euclidean straight lines cannot cut in more than one point. So far as I can understand, the process is supposed to be as follows: We image one fixed line AB and another cutting it at A. We then image this other line AX as continuously rotating about A. We see that in each of its positions it does not cut AB again, and we sum this up in the perfect induction that it never cuts it again. There are three points to notice: (a) Mr. Johnson holds that we succeed in imaging an actual infinity of positions. I should have thought it was just as impossible to image this as to sense it. (b) He insists that the process must be done by imaging, and not by perception, because "It is only through imagery that we can represent a line starting from a certain point and extending indefinitely in a certain direction" (p. 202). If Mr. Johnson can have indefinitely extended images he is more fortunate than I. (c) I understand Mr. Johnson to hold that the axioms of Euclidean geometry are supposed to be true of the physical objects in the external world. I should have thought it was extremely rash to extend the geometrical properties of our images to physical objects.

The last two chapters are devoted to what Mr. Johnson calls *Demonstrative Induction*. His treatment falls into two parts; (1) certain types of hypothetical syllogism in which an instantial premise leads to an universal conclusion, and (2) his substitute for Mill's Methods. The typical example of hypothetical argument which Mr. Johnson gives is of the form: "If some S is P then all T is U; but this S is P; therefore all T is U". It is thus an argument whose major is a hypothetical proposition with a particular antecedent and an universal consequent. The other premise is the assertion of a certain instance in accordance with the antecedent. The conclusion is of course the assertion of the universal consequent. Now no one would deny the validity of such arguments; the only question is whether they can be called inductive, even in the wide sense in which induction is defined by Mr. Johnson. In their most general form they hardly can be called inductive, for the conclusion is not a generalisation of the instantial minor. Mr. Johnson next quotes examples in which he alleges that the conclusion really is a generalisation of the instantial minor. One example is: "If some boy in the school sends up a good answer, then all the boys will have been well taught; the boy Smith has sent up a good answer; therefore all the boys have been well taught". I cannot myself see that the conclusion of this is a generalisation of the instantial minor. I should have thought that it was obvious that "All the boys have been well taught" could only be a generalisation of such an instantial proposition as "The boy Smith has been *well taught*," whereas the actual minor is "The boy Smith has *sent up a good answer*". I therefore see no ground for counting even this argument as inductive. In fact the only argument of this type which would be genuinely inductive, in Mr. Johnson's sense, would be of the form: "If some boys in the house have measles, all will have measles; the boy Smith has measles;

therefore all the boys in the house will have measles". This is demonstrative and inductive, and not altogether remote from the real facts of life, as housemasters know to their cost.

Mr. Johnson points out that arguments of this kind really are common in science. From what we know of the atomic theory we can say with great probability that "If one sample of Argon has a certain atomic weight, then all samples of Argon will have the same atomic weight". We then find that the atomic weight of a certain particular specimen is 40. And we are justified in concluding that all specimens of Argon will have atomic weight 40, provided our major is correct.

I will end with an account of Mr. Johnson's substitute for Mill's Methods. He sees clearly that Mill was confused as to the nature of the methods. Really they should be purely demonstrative, leading to conclusions which are as certain as their premises. And their premises have to be borrowed from the results of problematic induction. Now Mill hardly distinguished the Method of Agreement from Induction by Simple Enumeration, which is a form of problematic induction. Again, he thought that the ultimate majors of these arguments were very wide general principles, like the Law of Causation. Mr. Johnson points out that they need much more definite and concrete majors before they can be rendered genuinely demonstrative. These majors have to be established by problematic induction, and they take the following form in the simplest case. Certain sets of generic characteristics ("determinables," as Mr. Johnson calls them) determine a certain other generic characteristic. Each determinable is susceptible of a number (finite or transfinite) of specific modifications. *E.g.*, "colour" is a determinable, and a certain definite shade of red is a determinate under it. And of course each determinate is capable of being exhibited in an infinite number of particular instances. With these preliminaries we can state the kind of major premise which will serve for a demonstrative induction. We need—if I understand Mr. Johnson rightly—in the simplest case, to establish a proposition of the following kind as a premise. (1) In all cases where all the determinables ABCD are present the determinable P is present; and no other determinable (say Q) is present in all these cases. (2) In all cases where the determinable P is present all the determinables ABCD will be found; and there will be no other determinable (say E) common to all these cases. When such a premise has been established the demonstrative induction rests on certain axioms about adjectival determination. Let us see how much freedom this premise allows us. If I interpret Mr. Johnson rightly it is quite possible (1) that we should have *abcdp* and *a'b'cdp*, for instance. (2) It is even possible that we should have *abcdp* and *a'bcdp*. But (3), if this be so, we cannot have *a"bcdp*". In fact we may here conclude *Abcdp*, *i.e.*, that, although the presence of A in some form is necessary to the production of *p* yet its variations are irrelevant to the variations of *p*, so long as BCD

have the specific values bcd . (4) Even if we have $Abcdp$, we must not conclude that variations of A will be irrelevant to variations of p when BCD are not confined to the specific values bcd . We may perfectly well have $ab'cdp$ in spite of $Abcdp$. (5) Lastly, if we find that $abcdp$ and $a'bcdp'$, then we cannot have $a''bcdp$ or $a'bcdp'$; we must have $a''bcdp''$. I.e., if any variation of A is relevant to variations of P, while BCD have the specific values bcd , all variations of A will entail variations of P under the same conditions. But (6), even if this be so, we must not conclude that, when the specific values of BCD are no longer confined to bcd , we cannot have such a case as $a''bcdp$.

In all these arguments it is assumed that the determinables under discussion are "simplex," i.e., that A, for example, is not really a complex of two or more determinables, say A_1A_2 . It is also assumed that ABCD are all independently variable. Taking such a major as this, and supplying it with different sorts of minor from our observations, it is clear that we can arrive at four different types of conclusion, according to the nature of the factual minor supplied. (1) If all are simplex, and $abcdp$ and $a'bcdp$ then $Abcdp$. (2) If all are simplex, and $abcdp$ and $a'bcdp'$, then $a''bcdp''$, where p'' differs from both p and from p' . (3) If all be simplex, and $abcdp$ and $a'bcdp'$ then $a'cdp$ must be b'' , where b'' differs from b . (4) If $abcdp$ and $a'bcdp'$ and $a''bcdp$ then A cannot be simplex but must be of the form A_1A_2 .

These four types of argument Mr. Johnson calls respectively the figures of *Agreement*, *Difference*, *Composition*, and *Resolution*. The reasons for the first two names are obvious. In the third, after a variation in A has produced a variation in P we find that a further variation in A does not produce the expected further variation in P. We therefore conclude that this variation in A has been *compounded* with and neutralised by a variation in some other factor such as B. In the fourth we have the same sort of facts to explain; but we know that there has been no variation in the other factors, whilst we are not sure that all the factors are simplex. We are therefore forced to *resolve* the factor about whose simplicity we were doubtful into two or more factors.

Mr. Johnson illustrates his Figures and then deals with the more complex and actual case of a determined result involving several determinables PQRS, say. The general principles involved are the same, and will be clear to anyone who has understood the argument in the simpler cases.

I think there can be no doubt whatever that Mr. Johnson's Figures are a great improvement on Mill's Methods, both in logical rigour and in approximation to the actual procedure of scientists. There is, however, one criticism which strikes me. Surely the axioms on which Mr. Johnson bases his Figures wholly ignore the possibility of the laws of adjectival determination sometimes taking a *periodic* form. Suppose it happened that P was so connected with ABCD that—

$$P = A \sin (BC + D).$$

Then we should have $p = a \sin(bc + d)$ and $p' = a \sin(b'c + d)$ and yet $p = a \sin(b''c + d)$, provided that b'' is and b' is not equal to $b + 2\pi n/c$. Nor is this an outrageous supposition, since electromagnetism mainly rests on laws of this kind.

I have perhaps said enough to show that Mr. Johnson's book is one which no one interested in Logic and Scientific Method can afford to neglect. It contains many controversial points, as any thorough treatment of such difficult subjects must do; but I have no hesitation in saying that it is the best book that has appeared, or is likely to appear for a long time, on the absolutely fundamental questions with which it deals.

C. D. BROAD.

De l'Explication dans les Sciences. Par ÉMILE MEYERSON. Paris: Payot & Cie, 1921. 2 vols. Pp. xiv, 338 and 469. Price 40 fr.

I.

M. MEYERSON here deals from a different point of view with the problem which he handled with so much distinction in *Identité et Réalité* (1st ed., 1908, 2nd ed., much enlarged, 1912: Paris, Felix Alcan). These two books deserve to be widely known in this country, both to philosophers and to scientists. M. Meyerson's style is a model of concreteness and lucidity; his argument is wonderfully continuous, in spite of the wealth of illustration drawn from the history of science with which he enforces it.

The problem is one of theory of knowledge: to discover "the essential principles of thought." The method is to examine the processes of scientific reasoning as actually exhibited in the history of science (ix.). His work is not metaphysics, but, he hopes, "prolegomena to any future metaphysics" (xii.).

In this examination he does not trust the scientist's own accounts of his processes, but studies the scientist at work, so as to see how he acts. M. Meyerson's study then can be described as a study of scientific reasoning from a behaviourist standpoint (e.g., *Identité et Réalité*, 432-433).

In *Identité et Réalité* this investigation was pursued empirically. In the present book an attempt is made to justify the same results by a more deductive consideration of the conditions of scientific explanation as such.

II.

It is assumed throughout that man's reason is an instrument which has to be applied to the original data of experience (sensations) in order that a world may be experienced at all. This instrument, reason, has a structure, a form, which has remained without evolution at least during historic times, although there has been a steady evolution in the products of reasoning as applied to

the systematisation of experience. It is this constant form of human reason that M. Meyerson has endeavoured to bring to light (ii., 369 ff.).

One result follows at once, which helps to make the author's historical studies so valuable. If human reason in its essential form does not change, then all the scientific theories of the past are as reasonable as those of the present; and if we can think away later discoveries and new points of view and put ourselves at the old point of view, we shall see how reasonable that point of view was; and this is a duty enjoined on the historian. The importance of this cannot be too much stressed. M. Meyerson's favourite example is the history of the phlogiston theory; but the whole of his work bears the impress of it on every page.

III.

We can best bring out the author's attitude to his problem by noting his account of (a) atomism, and (b) theories of conservation (ii., 319 ff.).

(a) Atomism was the first scientific fruit of the sphere of Parmenides. It was fully matured, so far as its form is concerned, at its birth; and subsequent development has not altered its main lines. It has been throughout the ages, and continues to be to-day, the most powerful of all instruments in scientific discovery. It is peculiarly fitted to bring home to us the nature of human reason. While the one unchanging of Parmenides represents human reason taking possession of itself in its purity once for all (with absolute finality), atomism represents human reason straight away adopting its characteristic attitude to the world of existence. Atomism asserts persistence and admits change. It makes change quasi-rational by reducing it to variation of one type, and that the most akin to reason, *viz.*, change of position, or grouping, in space. "Il faut," says Cournot in a passage which M. Meyerson took as one of the mottoes of *Identité et Réalité*, "que les inventeurs de la doctrine atomistique soient tombés de prime abord, ou sur la clef même des phénomènes naturels, ou sur une conception qui la constitution de l'esprit humain lui suggère inévitablement." In a way they did both; but fundamentally—and it is on this that we wish to concentrate at the moment—the latter.

How far, then, it may be asked, does Atomism, which is *a priori* in that it received its complete outline at a time when experimental evidence for it was impossible, represent "une conception qui la constitution de l'esprit humain lui suggère inévitablement?"

Atomism contains aspects which do not satisfy reason, and which must therefore be regarded as foreign to the nature of reason. Atoms have definite shapes and sizes and positions in space. Why just these? reason must ask, but cannot answer. Atoms act on one another; and reason has never been able to comprehend transitive action. Atomism is rational, we see, only to the extent to

which it satisfies the demand of the mind for that which remains identical without changing; its irrationality is due to the fact that it involves a diversity which cannot be rationalised.

Here is one of M. Meyerson's essential points. The only genuinely rational would be the purely identical which contained no diversity. But such a pure identity could not exist; it would be a strict non-entity (see ii., 335, n. 5, for a note on identity). Thus reason *as applied to existence* is self-contradictory, since it postulates a diversity which it cannot fully assimilate. Hence in seeking to render existence completely rational, we are started on a path which would end in the complete destruction of existence—in acosmism. Yet, and this is the paradox of the situation, it is just the strenuous endeavour to accomplish this task which has provided the most fruitful results in the discovery of the laws of nature.

Atomism, as we see, shows reason coming to terms with that which is apparently only partially rational. It takes various shapes at various epochs, but the same general character underlies it always. It leaves sensation aside as an irrational which it makes no attempt to subdue. The history of the evolution of atomism is a history of attempts to bring more and more of the diversity of nature inside the atomic frame, of partial success beyond all hopes, and of a sudden emergence, from time to time, in an unexpected place, of a new brute diversity which resists reduction. The Brussels conference of physicists of 1911 furnishes M. Meyerson with many reflections on this matter (i., 39 ff., and *passim*). Viewed from another side, the history of atomism shows a series of attempts to reduce the multiplicity demanded by the form of atomism itself, to determinations of pure space: always with the same partial success and lack of success.

(b) Theories of conservation. At various times various principles of conservation have been held in science: some have proved erroneous, and some have up to the present been confirmed. All have the same character. They are partly *a priori*, partly *a posteriori*. From reason comes the demand for something which persists; from experience comes the suggestion for what it is that persists. M. Meyerson is extremely happy in his treatment of these principles; particularly in showing the rationality of the qualitative conceptions of the middle ages, of the theory of phlogiston, of caloric. Principles of conservation, he shows, are *plausible*, i.e. we are disposed to accept them on insufficient evidence because of their promise to satisfy reason. Reason wants something to persist, and every principle of conservation has been accepted because it both satisfied reason in this respect and showed itself capable of practical application. He is extremely happy in the way in which he shows how, once such a principle has won acceptance, it leads scientists to see as a fact the entity which persists, and thus a barrier of fact is erected against a new principle of conservation. Each new principle thus has to fight strenuously before it slays

its rival, but, once its rival is slain, it alters all the empirical facts in its own favour. M. Meyerson's account, again, of the way in which this principle is used implicitly in the building up, on the level of common sense, of a world of independent objects, enables him to reach one of his central theses, *viz.*, that the world of common sense is a half-way house on the same road to acosmism as that on which science is travelling.

IV.

The history of science, then, reveals a progressive attempt on the part of the scientist to show nature rational, and an ever renewed failure to do so. The existence of science proves that nature is partly in accord with reason; the existence of the irrationals (the irreducible characteristics which have either to be accepted as brute facts in the science or set aside as falling beyond the power of the science to include even as brute facts) which arise in every science indicates that this accord is only partial; the unexpectedness of the irrationals is a warning that we cannot map out beforehand the extent to which nature is rational.

The whole history of science for M. Meyerson is summed up at the beginning of its course in Plato's words (which he takes as the motto of *De l'Explication*): "accommodating by violence the nature of the other to that of the same" (ii., 315 n.). The scientist refuses what nature offers, and lays violent hands on her, forcing her diversity into identities; and nature shows herself pliable—but you never know when she will resist.

A very important example of this is to be seen in the concepts the scientist uses such as pure silver, a perfect gas, a weightless lever, a body moving under no external forces, etc. These things none of them exist; nor does nature suggest them of herself; but they are the basis of our whole treatment of nature.

"Mais alors n'est-ce pas là, de la part de la science," he asks, "une attitude contradictoire, n'est-il pas étrange qu'elle étudie le phénomène, qui n'est que changement, à l'aide d'un principe qui tend à affirmer l'identité de l'antécédent et du conséquent, c'est-à-dire à nier tout changement, et qu'elle se serve, en général, afin de pénétrer l'essence des choses, dont elle maintient la réalité, d'une conception qui aboutit à la négation de toute diversité? N'est il pas paradoxal au plus haut point qu'elle réussisse dans cette entreprise, que la nature, dans une certaine mesure, semble se montrer pénétrable, plastique, à l'égard d'une théorie qui vise à la démontrer non-existante?" (ii. 349).

Nevertheless, it is so.

V.

Two concepts are needed to express the full complex task of science; M. Meyerson calls them respectively the concept of law, and the concept of cause. He uses the word cause in the sense

in which it was used before Hume identified it with invariable sequence; and he keeps the word law for the notion of invariable sequence, or orderliness. Cause, then, for him, emphasises the element of identity ("causa aequat effectum: ex nihilo nihil fit"); while law emphasises the element of diversity, an emphasis which reaches its height in the principle of Carnot. Each principle is unworkable if separated from the other; this M. Meyerson brings out both by the whole argument of *Identité et Réalité* and by his trenchant criticism of positivism in *De l'Explication*. Yet he is not satisfied that it is possible to reduce either principle to the other. However intimately bound up together, the two principles, he insists, are really antagonistic. Causality in its ideal form (of absolute identity) is an ideal infinitely remote, and suicidal; while we hopefully assert the complete orderliness of nature here and now (with the exception of a large field which he leaves open for volition) (ii., 336-337: cf. *Identité et Réalité*, 428).

VI.

The direct logical approach to this position is made in the chapters of Book II., notably in chapters iii. and v., which deal with deduction. Book III., which discusses the nature philosophies of Schelling and Hegel (*L'Explication Globale*), forms an important indirect logical approach.

The nature philosophies of Schelling and Hegel, M. Meyerson thinks, are capable, in their contrast, of throwing clear light on the genuine nature of scientific explanation; and he endeavours to put them to this useful purpose. Hegel's description of the method of abstract science, he considers, is "just and profound"; it has been neglected by scientists because Hegel's object in describing science was to show how defective science is. Hegel, and M. Meyerson agrees, insists that explanation in the physical sciences rests on the concept of persistence, or the identical. The whole work of science appeared to him to reduce to an immense tautology, for he did not see the extent to which the concept of spatial arrangement of identical elements could be used in scientific explanation. In pure mathematics, M. Meyerson thinks, Hegel was willing to admit the value of the tautology; but just because mathematics proceeds by a setting aside of diversity, Hegel regarded it as incapable of serving as a type of genuine knowledge.

The precise sense in which mathematics treats entities as identical which it knows not to be so, setting aside temporarily all diversity which stands in the way of their complete identification, M. Meyerson treats in chapter v. His account is based on the fact that what exists shows itself individual and in every detail singular. Two things can be similar in a certain respect but not identical; if the universals which form the staple of reasoning are to arise, reason must force similars into an identity which they really do not show. It is clear that M. Meyerson is concerned only to pre-

cise a situation and not to propound a final theory of the relation of universal to particular; but at the same time he does definitely speak as if there could be, in his opinion, no ultimate way of harmonising similars and identities. Yet (as we have seen) it is one of his final conclusions that nature is partly rational, and by this he certainly does not mean that some parts of nature are wholly rational. What *ultimate* meaning, then, can be given to the phrase "partly rational," if the rational is the pure identical and all diversity is irrational?

We can say, I think, that M. Meyerson's account of reason involves that *in principle*, nature is in every part completely irrational. For the only truly rational would be a pure identity which was not given to reason, but was provided by reason out of itself. The first approximation to the truly rational is a number of entities, such as the A_1 and A_2 which form the real basis of the principle of identity " A is A ": where what we do is to affirm that " A_1 is A_2 ," neglecting as irrelevant the difference indicated by the suffixes. We have here an instance of what M. Meyerson would call "partial" rationality; but it is clear that on his view of identity such partial rationality is, strictly speaking, completely irrational. We have identification but not identity in the proposition A_1 is A_2 .

The identification may rest, in this case, on the basis of an obvious similarity (or an inability on our part to distinguish precise differences), as when we identify two animals as sheep: it is then spontaneous. It may however involve force, and have to be sought for: as where steam and ice are declared to be identical in substance. What we see presents difference and not sameness: what we require if we are to comprehend is identity: we compromise with "identi-fication". But in principle, as I have said, this identification is absolutely irrational. Nature can however be described as "partly rational" in the sense that it is amenable, within limits, to treatment by this process of identification (see ii., 139 ff.)

VII.

I think M. Meyerson has fully made out his case that the successes of science have been won by a constant endeavour to force nature into certain moulds. I think he has shown that reason must play an active forceful rôle, making demands which continually go beyond anything nature suggests and beyond anything which nature ever fully satisfies. But I think his identification of the purely rational with the purely identical is too forceful. To take one instance. The two sides of the formula "*existentia est singularium; scientia est de universalibus*" (i., 14-15), do not come, one from sense, the other from reason. It is not enough to say (as he does, quoting from M. Roustan's excellent *Psychologie*) that "*tout ce qui est perçu par nos sens se morcelle en sensations particulières*," while "*tout ce qui est conçu par notre entendement prend la forme d'idée générale*" (i., 15). The conflict between

"singularia" and "universalia" is not one between reality and science, sensation and understanding. It is one within reason itself. Both sides of the formula come equally from reason: and both sides come only from reason in contact with the material of perception. To describe science as pursuing identity in what is merely presented as diverse is to describe it only from one side: science equally pursues the completely definite, the singular, in what is merely presented as diverse. It is reason that insists that atoms, if they exist, must have a definite shape; just as much as it is reason that insists that there must be a reason why they should have this rather than that shape. Indeed, if you are to describe as rational all the ideals which science pursues, all the demands which reason makes of what is presented to it, you must take the rational as, *in toto*, a heap of contradictions. Reason demands equally the identical, the singular, the continuous, the discrete, the independent, the interrelated, etc. (see ii., 373, for M. Meyerson's point). My own view is that the explicit formulation of each of these demands, and the separate following of it to its end with the rigour of "a relentless logic," endeavouring to use it as the guiding thread through the labyrinth of reality, is an essential step in the process of refining the instruments which reason uses in its attempt to discover truth, but not a final step in the account of the nature of reason itself. What exists (nature) is presented as a tangle wherein reason demands "fibres" (i., 101; ii., 276, 285), because it is the nature of reason to demand fibres. But reason's own "fibres" are tangled and are disentangled by itself only one by one; and the process of disentangling them is a process of dissection performed by first dimly discerning a fibre in reason itself, and then endeavouring to see the whole of nature as built up entirely on the basis of this fibre. All this however is only dissection: reason is not a mere sum of fibres but a whole in which the fibres are inter-related and in which they modify one another.

Again, while I should say that the explicit account of the nature of reason as disentangled at any date is to be found in the *Logic* of that date, I should not agree that any logic could be final until complete knowledge of the Universe was reached. Man's reason, M. Meyerson says, is completely rational (ii., 307); but if that were true, there ought to be something, at least in the realm of concepts, which actually did, here and now, completely satisfy that part of man's nature which M. Meyerson calls his reason. But in fact there is nothing of this kind. What there is, is something which it is felt *would* satisfy a part of man's nature *if* man could completely comprehend existence by its help. The contemplation of pure identity does not bring satisfaction; pure identity is rather a demand which brings dissatisfaction with what existence presents, an ideal which *would* satisfy if it could be realised in existence. Complete rationality, I feel, is rather an ideal to be attained in the far away future; and an ideal which describes what not a part, but the whole of man's nature, is striving towards. The process of

attaining it demands that man should formulate with all rigour what he has so far attained of it, and endeavour to follow out its consequences relentlessly in thought and cautiously in action. For life demands to be allowed more freedom; and the conflict resulting is equally a part of the process.

To M. Meyerson's argument that reason has not changed we can apply his own method. His own investigation into the rational processes followed by science was compelled to postulate that those processes be regarded as identical with those of the present day, because otherwise he would have no key to the understanding of them; but he was equally compelled, in his investigation, to have recourse to the notion that much was only implicit in the processes as manifested in the infancy of science, which became explicit later on. Following his own method, we shall see there a confession of the partial insuccess of the postulate on the basis of which the whole investigation proceeded; but we shall recognise that this was inevitable, and that the investigation could take no other course, in its initial stage. But M. Meyerson has done his work so well that even those who differ from him in his view of what is completely rational will have little to change in his description of scientific processes.

We have left no space to deal with the profound discussion of the relation between science and philosophy in Book IV., and our mention of Book III. has been all too scant; but there is so much in M. Meyerson's volumes that we cannot hope to do justice in a few pages even to his main topics. As before in *Identité et Réalité*, there is a rich gleanings in the Appendices.

LEONARD RUSSELL.

VII.—NEW BOOKS.

The Greek Tradition from the Death of Socrates to the Council of Chalcedon, Vol. i. *The Religion of Plato*. By PAUL ELMER MORE. Princeton University Press; London, Humphrey Milford, 1921. Pp. xii, 352.

THE first duty of a reviewer must be to thank Mr. More for having given us so fascinating a first volume, and to express the hope that he may be able to complete the task he has set before him in a reasonable time. For the present reviewer, the second duty must be to express his hearty sympathy with Mr. More's general purpose as laid down in his *Preface*. The points on which the *Preface* lays stress are these: There is a continuous tradition of the spiritual life, presumably derived from Socrates, of which Plato's writings are the truest expression; this tradition dominates Greek thought, though, as Mr. More holds, it has been dangerously perverted in its later forms; from Greek philosophy it passes into the Greek fathers. In fact, the Christian Church, rather than the Neo-Platonists, is the legitimate heir of Plato, and there is thus a single uniform development from Socrates, or at any rate from the earliest work of Plato, to the completion of the formulation of the Christian faith at Chalcedon. The great truth which finds its expression in this development is that the human spirit itself is "dual," an inhabitant of the eternal and the temporal realms at once, and that all worthy living is based on the principle of subordinating the merely temporal in a man's self (the "flesh," as St. Paul calls it), to the eternal (the "spirit"). It is just this great conviction which our world to-day seems in danger of losing, and therefore, for the sake of the world's salvation, it is imperative to bid thoughtful men return to the literature in which the Greek and Christian truth is most plainly and emphatically preached, from the *Phaedo* down to Gregory of Nyssa and Chrysostom.

In all these fundamental points the writer of the present notes feels himself wholly at one with Mr. More. There are matters in which he cannot see altogether eye to eye with his author, but in his own opinion these, important as some of them are to a complete estimate of Plato's philosophy, are secondary in a study of Plato's religion and rule of life, and, in some cases, may be reduced after all to mere questions of the emphasis to be laid on a particular strain in the Platonic dialogues. The rest of this notice will necessarily be largely taken up with the raising of doubts about these points of difference, but I should like to make it clear beyond all question that I fully sympathise with Mr. More's central position and that I am keenly alive to the real beauty and literary charm of the style in which he presents it. I am the more anxious to do this that, rightly or wrongly, I found much to disagree with in Mr. More's preliminary work *Platonism* and its presentment of Socrates.

Now to say something on the matters where, rightly or wrongly, I find it difficult to agree with Mr. More, and would respectfully suggest to him that he might perhaps reconsider his utterances. The most important of these is his insistence upon regarding the Platonic philosophy, as well as

the Platonic religion, as "dualistic". As to the point from which Mr. More takes his departure, he is, indeed, clearly in the right. If Plato and Christianity are to be believed, there is a fundamental duality in the human soul; every soul of man is a denizen of two worlds at once, and "salvation" means definitely rising from the pursuit of the ephemeral to the pursuit of the eternal. And I further agree that most contemporary ethics and a great deal of contemporary speculative philosophy are rapid and mischievous precisely because they will not recognise this division of the soul against itself. But it is another question whether this duality in unity which we find in ourselves justifies an ultimate "dualism" in philosophy. For the unity of the person in whom the duality is found is precisely what makes the tragic element in the soul's life. I think Mr. More has been led into exaggeration on the point by a bias against the cheap "monisms" of the Spinozistic type or the type of an Hegelianism interpreted in a Spinozistic sense. For my own part, I fully agree with him that this sort of monism is the worst and most superficial of philosophies, and am wholly on his side in his vigorous protests against the interpretations which read "immanentism" and "pantheism" into Plato. But I do not see that there is warrant for ascribing to Plato a dualism which seriously sets up *two* cosmic principles. Still less do I think Plato would have agreed with Mr. More's "irrationalism" and distrust of logic. I venture to believe that Plato would have said that the cure for the kind of rationalism which shuts its eyes to all the facts that will not fit into its preconceived schemes is not less of hard logical thinking, but more of it. Indeed, this seems to be the real point of the *Parmenides*, where the youthful Socrates is warned that his helplessness in the face of criticism is due to lack of the indispensable *γυμνασία* in just this so-called "useless" dialectic. I do not think Plato shows any signs of the impatience Mr. More feels with what he himself calls "metaphysic" and describes as the attempt to rationalise the ultimate how and why of things. Plato is, to be sure, quite alive to the impossibility of achieving finality in such an attempt, but I am sure that he holds that we ought to do the best we can, because there really is an intelligible "ultimate how and why," even if our mortal eyes are holden so that we cannot see it.

I should like to suggest that this bias against "metaphysic" makes Mr. More unconsciously unfair to Neo-Platonism. When he complains of the mischief done by Aristotle (the least religious of great Greek philosophers), in narrowing down "imitation of God" to the "speculative life," I wholly sympathise, and I am moved to admiration by his fine pages at the end of the book on Plato's insistence on "service," where he says much which I have always tried to urge upon pupils in the course of many years' teaching. But the hard verdicts passed, for example, on Plotinus seem to me to indicate insufficient, or at least insufficiently sympathetic, study. Two passages are particularly singled out for reprobation, the famous words at the end of *Ennead VI.* about the flight of the "alone to the Alone," and the other about the shedding of memories of earth by the "risen" soul. I doubt if they will bear all the meaning which is put upon them. As for the "flight," there does not seem to me any evidence that Plotinus is preaching the shallow doctrine of the "absorption" of our personality into an impersonal absolute, which I should repudiate as vehemently as Mr. More does. I take him to be actually describing a fact of experience of which most of us have some knowledge, and I do not really believe that he goes beyond what Mr. More has said quite beautifully himself about the combination of detachment and attachment. And it seems clear to me, after an attentive and prolonged study of the leading Neo-Platonists, that their actual belief was quite definitely opposed to anything like "absorption". Union with the "One" is not "absorption"

into it; the plurality of individual immortal souls seems to me just as indispensable to the Neo-Platonist scheme as the dependence of all things on the "One". And as to the other passage, if it is read sympathetically, does it not appear as a justified protest against the triviality of spiritualistic "messages from the other world," a triviality equally obnoxious to Mr. More himself? I suggest that Mr. More exaggerates the differences between Plotinus and Plato by not allowing enough for the differences in their times. After all Plotinus led the life not of a cloistered quietist but of a man pretty fully occupied in the only business open to him, and he seems to have been fairly shrewd and successful even in the matter of looking after the investments of his friends. When the so-called "inactivity" of philosophers in the third century is censured, it is usually forgotten that their activity, when they got their chance, a century later, under Julian, is commonly equally censured by the very same critics.

I dwell on the point partly because I should like to suggest that Mr. More should modify his admiration for Plutarch as a guide to Plato's meaning. I think, if this were the proper place, I could show that Plutarch has definitely led him astray about the meaning of the *Timaeus*, but I do not dwell on the matter, as it, after all, concerns Plato's science and not his religion. From Plutarch himself we learn a good deal about the way in which the *Timaeus* was understood by Plato's own immediate pupil Xenocrates, and by Crantor in the next generation, and Plotinus, I should say, stands much more in the line of direct development from these first Platonists than Plutarch does.

I may mention, as a set-off to these doubts, a number of secondary points where I am delighted to find Mr. More vigorously championing what seems to myself the only true interpretation. I am glad that he will have no truck with the attempts to whittle down Plato's express ascription of personality to God and of immortality to the individual human soul. I am sure he is right again in refusing to confound Plato's God, who is a perfectly good *soul*, with the system of *εἰδῆ*, and I quite agree with him that in Plato's treatment the *εἰδῆ* are, in a sense, "above" God. (I am not equally satisfied that this doctrine is one in which we can finally acquiesce. Orthodox Christianity takes a different view and one which seems to me truer. At any rate, I am sure Mr. More is not right when he argues that, as a consequence of not putting the *εἰδῆ* above God, orthodoxy has come to regard moral distinctions as arbitrarily established by God, things of "mere will," to use Cudworth's language. I am sure that this is not and never has been the general sense of the Christian Church; still less is it a dogma of the Faith.) Again, I am delighted to see that, with all his deference to Plutarch, Mr. More will have nothing to do with an "evil world-soul". (Yet I wish he had not read astrology into the famous passage of the *Laws*. A careful study shows, I think, that when Plato insists on the existence of bad souls he is thinking simply of the undeniable fact that there are bad men. He goes on at once to ask whether the soul which "manages" the world is good or bad, and answers that it is good. Hence I do not believe that he means for a moment to entertain the notion that there is real disorder, caused by "malign" souls anywhere in the "heavens". I think Mr. More might, at least, reconsider his own interpretation.) On the other side, I feel sure—I am obliged for reasons of space to put my conclusions more dogmatically than I could wish—that it is a mistake to interpret the *ἀνάγκη* and *χώρα* of the *Timaeus* as symbols for the "dark," "unreasonable" element in our souls. The *Timaeus* is concerned with science as well as with religion, and what is said about *χώρα* and *ἀνάγκη* is a contribution to physics. Aristotle was quite aware of this, and has warned us that the doctrine of *χώρα* in the *Timaeus* is an analysis not fully agreeing with that given by Plato himself

in the Academy. This Platonic analysis, described by Aristotle, is on the face of it a piece of geometrical physics, not a contribution to religion. As for *ἀνάγκη* in the *Timaeus*, it demands a very careful study, and cannot be approached better than from consideration of Proclus's discussion of the meaning of *ἀνάγκη* in his commentary on the *Republic*. I will only remark here that the *ἀνάγκη* of the *Timaeus* cannot well be "chance," since its special function is to be the "under-strapper" (*ὑπνέρις*) of intelligence. But the true interpretation of the *Timaeus* is a topic which could only be treated successfully in an elaborate clause-by-clause commentary.

One naturally awaits Mr. More's further volumes with some impatience. There is one dark saying which I hope they will make clear. I do not see that the dogmatic definition of the *persona* Christi really has anything to do with the "dualism" in the human soul. The problem decided at Chalcedon did not concern the human soul of our Lord at all. It had to do with the co-existence in one person of a *complete* humanity and complete Deity. But, no doubt, Mr. More will make the connexion of thought more apparent in due time, though I confess that at present I find it obscure.

A. E. TAYLOR.

An Introduction to Philosophy. By WILHELM WINDELBAND. Translated by JOSEPH McCABE. London: Fisher Unwin, 1921. Pp. 365.

Speaking of previous 'Introductions' to philosophy Windelband says that "by far the most scientific and instructive work" is that of Külpe, and it would perhaps not be unfair to describe the present work as similar in character to Külpe's though written on a more ample scale and therefore in a fuller and less severe style. A brief outline of the scheme and contents of the book will show how far the comparison is justified.

The task of philosophy, according to Windelband, is to subject the working assumptions which are made in practical life and in the special sciences to a critical examination. The aim of an 'Introduction to Philosophy' accordingly is to show how in the course of such an investigation certain fundamental problems inevitably present themselves and what are the main lines along which a solution of these problems has been sought. The fundamental problems of philosophy are divided into the two main classes of Theoretical problems, on the one hand, and Practical or rather Axiological (problems of value), on the other. But we are warned that this division cannot be rigidly maintained, and Windelband is inclined in fact to lay great stress on the part which ideas of value play in philosophy. "Metaphysics is the hypostatization of ideals" (p. 40).

After a preliminary section on the distinction between reality and appearance—the distinction which necessarily provokes philosophical reflexion—the theoretical problems are divided into three groups: ontic, genetic, and noetic. The 'Ontic' problems are discussed under the three heads of Substance, Quantity of Being, and Qualitative Determinations of Reality. The section¹ on Substance first deals with the notion of thing or substance generally, then contrasts the tendencies to seek true substance alternatively in the universal or in the individual, and lastly considers the difficulties of conceiving the essential unity of the substance in relation to its diverse properties or states. The section on Quantity discusses first the opposition between systems of Monism or Singularism

¹ In an English book the sections would rather be chapters. The section on Substance, e.g., runs to 25 pp.

and systems of Pluralism, and second the problems connected with the contrast of Finite and Infinite as regards space, time, and existence generally. The section on Quality discusses the distinction between primary and secondary qualities, the reference to mind involved in the distinction, the nature of mind, and then the fundamental opposition between mind and matter, together with the philosophical systems—Spiritualism, Materialism and Dualism—whose character depends on their treatment of this opposition.

The chapter on Genetic problems deals in the first section with succession in time generally, in the second with problems of causality, in the third with the opposition between mechanism and teleology, and in the fourth with the relation of body and mind.

The chapter on Noetic problems may be described as a short general account of theories of knowledge in connexion with such topics as the criterion of truth, the origin and validity of knowledge, and the types of science. In a section on 'The Object of Knowledge' Windelband seems to permit himself a more direct statement of his own views than he does as a rule elsewhere.

Part II. is devoted to the Axiological problems, and, after an introductory section on the psychological and normative aspects of valuation in general, deals in successive chapters with Ethical, Æsthetic, and Religious problems. The scheme of the first chapter is indicated in the following quotation. "The subject of moral conduct is partly the individual, partly the social community, and partly the species in its historical evolution. Hence we get the three sections of practical philosophy which we may distinguish as morality, social science, and the philosophy of history" (p. 219). The first section accordingly deals with ethical problems in the narrower sense of the term, and considers successively the content, the knowledge or psychological source, the sanction, and the motive, of morality. Under the first head a brief criticism of types of ethical theory is given, and the section concludes with a few pages on the freedom of the will. The second section deals with the relation of the individual will to the General Will of the community, the various types of community such as the family, the State, and the Church, the problem of their function or value, and finally with the philosophy of law and of the State. The third section deals with personality as the vital factor in history—"what constitutes the power of the significant personality is that it develops superpersonal values in itself and externalises them" (p. 237)—with the idea of humanity, the nature of historical progress, and the ultimate or metaphysical significance of history.

The chapter on 'Æsthetic Problems' has three sections entitled respectively 'The Concept of the Æsthetic,' 'The Beautiful' and 'Art,' but the whole chapter covers only some twenty pages and may be passed over without further remark. The concluding chapter on 'Religious Problems' is also somewhat meagre and disappointing, especially when we consider that it is in the sphere of religion that we meet our final question as to the relation of the axiological to the theoretical problems. The first section deals with the distinctive character of religion in general and maintains that religion has no special province of values such as science, art, and morality have. "It consists in the metaphysical tincture and relation which all these values may assume. Religion would be deprived of its universal significance if the sacred were marked off from the other cultural provinces as a special section of the life of values" (p. 328). The second section, entitled 'The Truth of Religion,' gives a brief account of the arguments for immortality and the existence of God. The final section on 'Reality and Value' insists on the dualism of 'ought' and 'is,' of value and reality, as one which we cannot rise above. "The fact

of valuation necessarily implies a dualism of the valuable and valueless in reality. This subtle truth, which is easily overlooked, may be traced in the meaning of the two attitudes which we find opposing each other under the names of optimism and pessimism" (p. 352). But the dualism out of which these opposed doctrines spring is one which we cannot resolve. "From the very nature of the case this final problem is insoluble. It is the sacred mystery, marking the limits of our nature and our knowledge. We must be content to remain there and to recognise that here, at this inmost point of life, our knowledge and understanding can reach no further than the other side of our being, the will. For the will the duality of value [and] reality is the indispensable condition of its activity. If value and reality were identical, there would be no will and no event. All would remain motionless in a state of eternal completion. The innermost meaning of time is the inalienable difference between what is and what ought to be; and because this difference, which reveals itself in our will, constitutes the fundamental condition of human life, our knowledge can never get beyond it to a comprehension of its origin" (pp. 358-359).

Windelband claims in the Preface that his work is not an introduction to a particular philosophical system but "makes a very wide survey of all the possibilities in the way of solutions". While granting that "naturally, it is based upon the author's personal view," he tells us that "this will not be pressed, or suffered to influence the author's judgment in appraising other systems of thought". And on the whole his claim is justified, for he is usually careful to state as fairly and objectively as he can the arguments and difficulties on both sides of any controverted question. But he seems sometimes to be unaware that he is making large assumptions and taking propositions as self-evident that are far from being so. One or two examples will suffice. "The more a personality can be described or defined, the less is its individuality and originality" (p. 64). "The successive acts of consciousness, of which the individual experience consists, are discrete or discontinuous elements" (p. 123). "The self-knowledge of the soul is . . . the only knowledge in which we can be convinced beyond doubt of the likeness between knowledge and its object" (p. 193). In one set of utterances the author displays a curiously superficial cynicism. "The morality of enlightened interest . . . is the morality of actual life: the theory that the great majority of men have held in all ages and will continue to hold" (p. 228). "We may be confident that what seems to be morality in the case of the great majority of men is no more than legality based on fear and hope with respect to various authorities" (p. 245). "Personality again has various degrees. The great majority, who seem to be there merely for the propagation of the race, have only a potential personality" (p. 281).

To estimate the value of the book accurately is not easy. As the work of a prominent historian of philosophy it is of course written out of a full knowledge and contains plenty good and interesting matter. But for one thing it is not clear for what class of readers the book is really designed. It is not well adapted either to the needs of the student who is just beginning his study of philosophy or again to those of the merely general reader, inasmuch as it tends to assume too much previous knowledge. What, for instance, are such readers likely to make of a passage like the following? "[Kant] found that theoretical reason threatened to call into question, not only the knowableness, but even the thinkableness—that is to say, the metaphysical reality—of the suprasensible, or at least to make it entirely problematical; then his practical reason 'realises' the suprasensible, and inspires a conviction of the higher world of ethical-religious metaphysics lurking behind the appearances" (p. 41). To the

more advanced student the value of the book is naturally lessened by the almost inevitable circumstances that the ground covered is often very familiar and the treatment, in spite of the fairly large scale of the book, summary and unsatisfying. On the other hand he will no doubt find many interesting and suggestive surveys of the topics of philosophical controversy. It is a drawback, however, from this point of view that no detailed references to the literature are given which would enable the student to follow up a subject for himself. Probably the book would be of most use to the student or general reader who had obtained some knowledge of the history of philosophy and wanted to take stock of the results. But I question whether even for this purpose the plan followed in the book is a good one.

It is no doubt a very difficult thing to write a good Introduction to philosophy, and the difficulties are to a large extent inherent in the nature of the case. But I do not think that Windelband's plan meets them in the best way. In the second part of the book, where he is dealing with the Ethical, Æsthetic, and Religious problems, he is simply traversing in a rapid, and necessarily partial, way the ground of certain special subjects. Of the three chapters the best is that on Ethical problems, but the student would probably always be better served by going to the special treatises devoted to the respective subjects. In the first part of the book the chapters on the Genetic and Noetic problems are the most interesting and profitable to read, because the sections have some definite sequence and deal with a connected series of problems. The chapter on 'Ontic' problems, on the other hand, with its three sections on Substance, Quantity, and Quality, seems to me to adopt a radically bad method, which leads to artificial separations and conjunctions, and prevents the reader from gaining any broad view of the types of metaphysical theory which have played a leading part in the history of philosophy. The author splits up problems in Külpe's fashion and with even more unfortunate results. Thus under the head of Substance we have an opposition between Universalism and Individualism, and under the head of Quantity very much the same opposition with the new designation of Monism or Singularism versus Pluralism. But Dualism, Spiritualism, and Materialism are discussed in the section on Qualitative Determinations of Reality. We have only to take a philosophy like that of Leibniz to see how misleading all this is. To put his Spiritualism and Pluralism and Individualism under separate heads as answers to separate problems is simply to destroy the systematic connexion which is the essence of a philosophy—surely a poor way of introducing the reader to "the science of philosophising". Whatever its merits in detail, the chapter as a whole can hardly be otherwise than puzzling and confusing to the ordinary student or general reader, and unfortunately it is in one way the most important chapter in the book, dealing as it does with the fundamental types of ontological theory.

Not having the German original for comparison, I cannot speak with confidence as to the merits of the translation. It seems as a rule to read well enough, at least to serve its purpose. On the other hand, not to speak of mere slips, it makes mistakes which are obvious even in the English version. The following are some examples from the early sections. The English word 'antinomianism' has no such connexion with philosophical antinomies as the German original doubtless has. In a passage that refers to Leibniz's monadology we are told that "the universe is unity in plurality in the sense that each of its parts is equal to the whole and therefore to all the others" (p. 85). The original must surely speak of resemblance or correspondence here, not of equality. In the statement that "the unity of mass is in all cases arbitrary and

conventional" (p. 88) one suspects that "unity of mass" should be "unit of measurement".

The German original was apparently published in 1914, but owing to the war it is probably little known here, and the English version will therefore be specially useful.

H. BARKER.

A History of Psychology. By GEORGE SIDNEY BRETT. London: Allen & Unwin, Ltd. New York: The Macmillan Company, 1921. Vol. II., Mediaeval and Early Modern Period. Pp. 394. Vol. III., Modern Period. Pp. 322.

These two volumes complete a history of which the first volume, *History of Psychology: Ancient and Patristic*, was published as far back as 1912; Prof. Brett is to be congratulated on the result. The history of psychology is an exceptionally difficult theme to handle. Psychology is not yet a branch of science, and it is no longer a branch of philosophy. It is still engaged in working out its own salvation. In discussions, even of the most purely "experimental" data, there are constant references to names and theories of earlier psychologists, and there has been great need for a handbook giving a sketch of the more important writers on psychology,—their works, their attitude on the fundamental questions, and their contributions to the progress of the subject. This need the present work supplies; but it does much more than that. With all its scholarship and its science, there is a vein of enthusiasm and romance running through the work, and we agree with Prof. Brett that it is "worth while to contemplate the spectacle of a quest which has called forth from the beginning of time the most passionate desires, the most distorted theories, the most bitter disputes, and the most refined thought possible to the human being". If this were the history of a science, it would be the chronicle of discoveries of fact, of the forming of theories and their gradual replacement by others, as experiment or practical application showed their errors. But there are few facts of mind to record, and the theories are presented here as successive variations upon a comparatively small number of themes. In other words what we have is the history of a part of philosophy, and of the gradual, as yet incomplete, detachment of the part from the whole, and its struggle for independence. Questions of "presuppositions," methods of inquiry, and methods of interpretation, bulk far more largely than those of facts, of laws, or of practical applications.

Mr. Brett's general plan for the work is to give for each period first the state of the sciences which influenced psychology, then the state of psychology itself during that period, then the influence of psychology upon other sciences, and its general applications. But it is only occasionally (*e.g.*, in Part III. of Vol. II.) that he is able to carry out this scheme; mostly the order of time dominates, but occasionally a separate topic is worked out by itself, and the geographical order also intervenes. In the second volume, the divisions are—Part I., The Background of Mediaeval Thought (Theology, Scholarship, Tradition); Part II., Mediaeval Doctrines (the Beginnings of Mediaeval Psychology in the ninth, and up to the end of the sixteenth century); Part III., From the Sixteenth to the Eighteenth Century; and Part IV., The Eighteenth Century.

As we approach modern times, the space given to each century increases. The nineteenth century has the third volume to itself; Part I., The Age of Transition (Scottish School, Fries, Herbart, Beneke, Schopenhauer, etc.), Part II., Modern Psychology—"General Scientific Tendencies,"

"From Fechner to Wundt," "Representative Types of Theory," "British Psychology in the Nineteenth Century," "The Progress of Psychology," and "The Scope of Modern Psychology," being the titles of the successive chapters.

The style has a distinction, and clearness, with frequent flashes of humour, which make the volumes easy to read, in spite of the unavoidable tediousness of some of the topics. Of a certain French treatise on the faculties of the soul we are told that it "reached a second edition in 1865, and was henceforth regarded as the catechism of this school [Jouffroy's] and its most complete condemnation" III., p. 24: of Mansel, that "his defects were not personal, they were the excellences of his generation" *ibid.*, p. 28. The only defect, if it is one, is the constant tracing of views and theories back to Aristotle, Plato or Plotinus. A theory is not explained when it is said to be Aristotle over again; similarly, there is perhaps too much said of "anticipations" of modern views, e.g., in Erigena, in Duns Scotus, etc.

Neither in psychology nor in philosophy are there any real anticipations; Aristotle's psychology may have had a direct influence when it was really studied; but this it very seldom was. The apparent similarity of so many views—e.g., those on the activity of the soul, the importance of feeling, etc., to those of Aristotle, is irrelevant in a genuine history; the formula may be the same, but almost certainly what is meant in each age, by such a term as "activity" is something quite specific, and different from Aristotle's meaning. As an example—of Albertus and Aquinas it is said (II., p. 116), "We have here already the cleft between mind and matter which Descartes will be found developing later; we have, too, the Cartesian principle of union through God; and, at the same time there is more than one suggestion of that later Aristotelianism which Kant so ingeniously elaborated". I am not sure that Mr. Brett appreciates the extraordinary skill and delicacy with which the great scholastics were working out, for their own immediate needs in the first instance, but also for all time to come, a language which would be adequate to express the deeper aspects of the soul to which men were slowly penetrating. No doubt there is an attractiveness in the discovery that something very like Wundt's theory of Apperception, and James' fringe of consciousness, appears in Duns Scotus, or that Associationism dawned for a brief and ineffective moment in the minds of Witelo and Roger Bacon, and that subconscious factors in mind were appealed to again and again, from Augustine onwards, before the theory reached its height in modern psychology. But it does not really explain how each writer came to hold his particular form of the theory, and at one particular period in history.

In the third volume (p. 130) Mr. Brett discusses the idea of a "psychological" account of writers and their systems—"Whether that means the consequent rejection of all such systems, as exploded fictions, is quite another question. To give a psychological explanation of a course of thought is not the same thing as proving it a form of madness." Probably, if it could be done, a psychological account of systems would really give the most satisfactory history, taking into consideration both the tradition and the social environment of the writers. The views held by psychologists about the nature and structure of the mind, its relation to the brain, etc., have, down to our own times, been decided by their view of life and its meaning, their philosophy. "It is an open question whether a psychologist can be an idealist or a realist. He should perhaps be simply a psychologist. But apart from collectors of details and writers of monographs, history has failed to produce a psychologist who was not a philosopher of some kind: and it is notorious that a rejection of all

metaphysics is the most metaphysical of positions" (III., p. 147, 148). "All through the centuries thought has been observed trailing a cloud of speculation—and here, in the middle of the nineteenth century, we find the same problems that troubled Plato still unsolved, and a mind that embraces Platonism and Atomism [Fechner] repeating again the lost formulæ that should exorcise the mystery" (p. 129).

Accordingly Mr. Brett's discussions of the psychologists are rarely other than philosophical. On the purely experimental psychology of recent years he touches in passing, as in discussing Fechner and Wundt, Ebbinghaus, "the Würzburg School," but even in these it is the underlying questions, the relation of mind and body, the analysis of the thought-process, etc., that interest him, rather than the methods and detailed results. (This gap is filled, however, by Klemm's useful history.) The theory of Vision—colour-sense, perception of form, localisation—is taken up more thoroughly, from the interesting account of Alhazen (II., 59 to 63) onwards to Descartes, Johannes Müller, Helmholtz, Lotze, etc. Perhaps Mr. Brett's interest in vision and its psychology leads him rather to neglect Stumpf and G. E. Müller, among modern psychologists; their importance is greater than the relative space he allows them suggests.

Of the moderns, Lotze, Ward, and Stout are evidently recognised as satisfying Mr. Brett's own psychological ideals; Lotze, because with him "the high tide of intellectualism has already turned; feeling is given a prominent and significant place in the system," and the value alike of physiology to psychology and of psychology to physiology is recognised; Dr. Ward for his theory of psychic activity—"Ward broke new ground on one fundamental point—the idea that life and growth belong to the mind as truly as they belong to the body. The total impression is that of a process which must be described piecemeal, but takes place always as a whole; it is an impression of organic unity, an impression of vital impulse ever extending its unity over a greater variety and complexity of action. To grasp this idea is more important than disputing details, for out of the idea comes inspiration" (III., p. 239).

The whole work is remarkably fresh, vivid and attractively written; psychologists will be grateful that a work of this kind has at last been done, and done by one who has the scholarship, science, and philosophical training that are requisite for the task.

At the end of each volume there are useful references to the literature. One or two errors have slipped into the text; on p. 279 (Vol. II.), "Gray" should be Gay—the clergyman who put Hartley upon the way of Association. On p. 278, text and note seem to have some confusion with regard to Hartley's work. The German translation and notes seem to have been first published in 1772-1773; these German notes to have been translated and added to the second edition of Hartley's complete work, 1791; the fourth edition, 1801, had Priestley's additions instead of the German ones, and the fifth edition, 1810, had no additions.

J. L. M.

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VIII.—PHILOSOPHICAL PERIODICALS.

THE BRITISH JOURNAL OF PSYCHOLOGY. Vol. xii., Part 2. October, 1921. **W. H. R. Rivers.** 'Affect in the Dream.' [The author accepts the view that dreams are the attempt to solve in sleep the conflicts of waking life and points out that, since in sleep only the earlier levels of mental processes are functioning, the solution of the conflict must take on an infantile aspect. Transformation in dreams is thus a form of regression and is not due to the work of a "censor". Its effect is to lessen the affective aspect of the conflict. When there is no transformation there is affect, pleasant or unpleasant according to whether the strongest wishes of the dreamer are fulfilled or not. The intensity of affect is itself a mark of the infantile nature of the dream.] **P. B. Ballard.** 'The Limit of the growth of Intelligence.' [Describes the application of a series of "absurdity" tests among pupils and students from eleven to twenty-two years of age or more. No greater superiority in these tests is shown by pupils over sixteen years, from which it is inferred that "intelligence" ceases to grow about the age of sixteen or grows at only a very slow rate.] **B. Muscio.** 'Feeling-tone in Industry.' [Reaffirms the importance of feelings of fatigue as determinants of output, though they may not be correlated very highly with output in experimental work done under highest pressure. Reports as to fatigue at different times of the day by twenty individual students and fifteen typists show rough correspondence between the degree of freshness and normal industrial output. "It is strongly suggested that the deterioration of output towards the end of a spell of work is a direct response to the painful feeling-tone of these 'feelings' of fatigue." These feelings may thus play a far greater part in normal work than current fatigue investigation, engrossed with physiological problems, recognises. And it is suggested that "feelings" generally—and not merely "fatigue" feelings—"should be accorded more notice in connexion with various sides of industrial life than they at present receive".] **T. H. Pear.** 'The Intellectual Respectability of Muscular Skill.' [Discusses the value of kinæsthesia, its loose connexion with language, and the marked degree of individual variations in respect to kinæsthetic imagery. He enquires into the possibility of a "language of kinæsthesia" emphasising what its value would be in motion study. Other questions discussed are the 'intolerance' of persons with predominant kinds of imagery, the utility of visual imagery in learning muscular co-ordinations, and the improvement of the social and intellectual status of kinæsthetic knowledge.] Other articles in this number are as follows: **H. Hartridge.** 'A Vindication of the Resonance Theory of Audition,' II. **A. G. Sillitoe.** 'A Portable Choice Reaction Time Apparatus' (with diagram). **Charles Fox.** 'A New Method of Marking Group Tests.' **Charles Fox.** Critical notice of J. C. Maxwell Garnett's 'Education and World Citizenship: an essay towards a science of Education'.

Logos. Anno iv., Fasc. 4. October-December, 1921. **C. Schuwer.** *La philosophie et les systèmes.* [The author's main thesis is that the true philosophy *perennis* is the gradual creation of time which integrates the thought contained in the various "systems" of individual thinkers into a permanent and coherent whole.] **A. Chiappelli.** *Dinamica spirituale.* [A good essay on the necessity of a genuine Theism as the only way of reconciling the unity of aim and tendency in the known world with the plurality of finite subjects. But why does the author think it necessary to deny the reality of the distinction between good and evil? To argue that the tendency of the world is to the elimination of evil one need not deny that, as things are, evil is very real and that it is just because it is so real that it needs to be overcome and cannot be simply ignored. But it is gratifying to see that the fancy of a "finite God" is absolutely rejected.] **E. di Carlo.** *Teoria filosofica del diritto.* [Why are not all "events," but only human actions, the "field" of law? Because human actions are not mere events, but acts, "in immediate correlation with the volitional activity of a human subject". What, then, are the specific characters of an act? The all-important point is that "imputable acts" issue from *deliberation*. Hence Del Vecchio's definition, "an act is the mode of being of a subject in so far as it has its *principium* in the subject," is too wide. It would include mere physical reflexes and sense-reflexes. Mere thoughts, again, cannot come under the cognizance of the law.] **N. Abbagnano.** *Il realismo critico in America.* [A brief exposition of the main thesis of the "six realists," mainly directed to the point that, on their theory, the actual existence, the "that" of the object known, is asserted on the strength of an extra-logical instinct.] **W. Riey.** *American Realism and Its Critics.* i. [A severe criticism of Messrs. Sellars and Spaulding, which suggests that not only do they not know their own meaning, but that their doctrines really have no coherent meaning. I could wish there had been a marked protest against the ignorant attempt to shelter what seems to be only a "neutral monism," obscurely expressed, under the name of Plato, an authority with whom the "neo-realists" in question do not seem to have very close acquaintance. And I do not see that the "traditional account of consciousness," whatever it is, is "done for" by simply calling consciousness an "awareness" or a "dimension".] **A. Aliotta.** *Il razionalismo e le verità matematiche.* [A. maintains that the method of pure mathematics is throughout radically "experimental". It is all a matter of making hypotheses and verifying them. The "*a-priorists*," from Plato to Russell, are regarded as refuted by the considerations (a) that different geometries are equally legitimate, (b) that the choice of indefinables and indemonstrables is, in part, arbitrary, (c) that the demonstrations of geometry only prove logical implications. But when all this is admitted, is "Platonism" really disposed of? As the *Phaedo* shows, Plato's doctrine was not really what A. calls it, a "crude intuitionism". Granted that all the geometer proves is that *his* postulates logically imply his conclusions, are the laws of logical implication themselves arrived at by a previous experimentation? The unresolved difficulty, to my mind, is that in genuine experimentation you have always something by comparison with which you may "verify" your hypothesis; in pure mathematics, there seems to be nothing outside the body of deductions from your postulates which could serve to "verify" the postulates. The body of deduced consequences has to be at once the inference from the hypothesis and the evidence by comparison with which the hypothesis is verified.] **G. Della Valle.** *L'apriorità dell' intuizione e l'universalità dei Valori.* ["Values" arise from an intuition which consists in the application *a priori* of a specific category of value to a mental state. Value

—the category—is always one and identical; differences of quality between values are due to differences of the extent to which the category is applied. Knowledge is a special case of valuation.] Reviews.

RIVISTA DI FILOSOFIA NEO-SCOLASTICA. Anno xiii, Fasc. v. September-October, 1921. **Editorial.** [Explains the inauguration at Milan on the preceding 7th December of the Catholic University of the Sacred Heart, of which this Review now becomes the official organ, and the organisation in particular of the department of Philosophy. The projected course seems a very sound and thorough one; the present writer wishes the new University much success in its work.] **G. Cattaneo.** *Roberto Ardigò nei ricordi d'uno dei suoi primi discepoli all' Università di Padova.* [Reminiscences of the famous ex-priest and Positivist by an early pupil, a student at Padua when Ardigò was appointed there in 1881.] **G. Sestili.** *La Filosofia di S. Bonaventura.* [A careful study of S. Bonaventura's most characteristic doctrines of (a) the aim of philosophy, (b) created things, (c) knowledge. Well-documented; I confess the defence of the "ontological argument" seems to me to evade the real difficulty. The author seems to me to establish only the hypothetical proposition, "if there is a God, He exists," or "if God is known, He is known as existing". The persistent objector would probably say, like Hobbes, that God may be imagined or thought of, but is not known at all.] **C. Baumker.** *Pietro d'Ibernia.* [Continuation of the article begun in Fasc. ii. Peter's disputation before Manfred shows no Augustinian influence. It is wholly a product of the Aristotelian movement; the author's connexions are with medicine and natural science, not with theology, and his guide to Aristotle's meaning is not Avicenna but the less Neo-Platonic Averroes. His Aristotelianism may probably have been a formative influence in the thought of his disciple St. Thomas. The Latin text of the disputation is given.] Reviews. Anno xiii, Fasc. vi. November-December, 1921. **E. Ciafardini.** *L'immortalità dell' anima in Cicerone.* [A discussion of Cicero's first *Tusculan*, marked by sympathetic understanding of Cicero's personality. But the Platonic proof that the "motion which moves itself" is everlasting is much more fully expounded in the *Laws*, to which no reference is made, than in the *Phaedrus*, and a study of Prof. Burnet's edition of the *Phaedo* might lead Mr. Ciafardini to reconsider his remarks about the historical character of the picture of Socrates in the *Phaedo*.] **P. Rotta.** *Del Platonismo in Aristotele.* [Concluded from the issue for January-February, 1921. The author rightly dwells on the point that the opposition between Platonism and Aristotelianism is far from being so sharp as the tone of Aristotle's own criticisms would suggest. His view is that Aristotle habitually forgets that Plato's doctrine is primarily epistemological whereas his own is cosmological. I am not sure that this distinction is really valid. To understand Plato's thought we should surely start rather from the notices of his teaching furnished by Aristotle himself and other immediate pupils, and from works where Plato is not hampered by the necessity of keeping up the dramatic fiction that we are listening to a conversation held in the fifth century, that is from the *Laws*, the *Epinomis*, the *Epistles*, than from the *Philebus* and *Timæus*, where we are dealing with the ideas of fifth-century Pythagoreanism. The *Philebus* may serve as an *instantia crucis*. We know from Aristotle that the Pythagorean antithesis of Infinite and Limit was not accepted, in that form, by Plato, and that this was one of the two points which, according to Aristotle, made the difference between the two philosophies. Yet all through the *Philebus* Plato works, obviously from a desire for dramatic verisimilitude, with the Pythagorean categories. Robin, to my mind, is obviously beginning at the right end in attempting

to get at Plato's thought by asking how it was understood by such men as Aristotle, Xenocrates, Speusippus. Now the *Laws* shows that, so far from the conception of God playing a subordinate part in Plato's thought, it was this concept, and the use of it to solve the cosmological problem, which was central in Platonism. If I might make a suggestion, I could wish that a neo-scholastic would attempt to discuss the question whether the real *perennis philosophia* is not just the Platonism in Aristotle, and whether everything in Aristotle which is not really in Plato is more than an obstinate survival of "naturalistic" prejudices due to early education in Ionian cosmology and biology. Mr. Rotta has naturally a great deal to say of the so-called *voûs ποιητικός*. Is not the appearance of this disturbing "supernatural" entity at the end of an otherwise naturalistic work on psychology just an example of Platonism imperfectly amalgamated with Ionian naturalism? **L. Stefanini.** *Morte e vita nel pensiero di G. V. Gravina.* [Concluded from an. xii., fasc. vi.] Notes and discussions. *Lo stato attuale della filosofia tedesca.* [A good general survey. But why cannot the champions of the *philosophia perennis* speak of Kant fairly and dispassionately? We need be no Kantian to be alive to the facts that Kant was a considerable thinker and that the version of his thought given by the "idealist" neo-Kantians is a travesty. Why must Kant be the scape-goat for the sins of men whom he would have been the first to disown? And—it is a small matter but significant—Kant never wrote a work on *Religion within the limits of Pure Reason*. What he did write of was *Religion within the limits of Mere Reason*, a very different matter.] Reviews.

RIVISTA DI FILOSOFIA. Anno xiii., No. 3. July-September, 1921. **P. Carabellese.** *Che cosa è la Filosofia?* [The discussion starts with the views of Gentile and Croce, the latter of whom really abolishes philosophy as such by making it identical with its own history. The writer's own view is that philosophy is wrongly described as "knowledge"; it should be more precisely called "theory". It is theory with the universal for its object, not the so-called "concrete" universal, but the abstract universals of which all concretes are the synthesis. Such universals are the limits of the concrete and are never absolutely reached. Philosophy, similarly, is always in the making, never made.] **L. Vivante.** *Dell'intelligenza nell'espressione.* [The distinctive characteristic of poetical utterance is that the "matter," words, rhythm, rhyme is not a mere external vehicle for an already formed thought; it suggests and provokes the thought. Of course this is true in a lesser degree of good prose.] **G. Semprini.** *Sul misticismo.* [Mysticism not "pathological" nor yet identical with religion.] Reviews, etc. Anno xiii., No. 4, October-December, 1921. **C. Quastella.** *Il concetto fenomenistico dell'identità del me e dell'incosciente.* [An extract from the author's *Ragione del fenomenismo*.] **G. Montesano.** *Psicologia del riso e del comico.* [Numerous theories of the "laughable" or "comic," from Plato to Freud, are reviewed, and all found inadequate. The author's own view is that laughter, a sudden explosion by which energy is diverted into new muscular channels, is valuable as giving relief from muscular fatigue. The source of the sudden explosion can be explained psychologically by starting with the simple case where we amuse ourselves by "playing a trick" on some one. What causes the explosion and gives the relief, and so causes the laughter when we "drop the mask," is the contrast between the attitude we pretend to be keeping up and the very different one we are shortly to assume. This gives us a clue to the character of the "comic" situation in general. Here the whole situation may be a feigned one, but the point of it lies in sympathetic appreciation of the relief which comes from a momentary throwing off of the inhibitions

conventionally imposed on our social behaviour and of the fatigue of keeping them up. The theory is cleverly worked out with a good deal of detail, but one may perhaps suspect that it is a little too simple. I would suggest that the discussion of "laughter" should be kept carefully apart from that of the "comic". There is much laughter which is not provoked by the "comic". Laughter may be an expression of pain, of anger, of sheer affection. Nor is this remarkable when we remember the diffused character of the bodily expressions of emotion. And is it clear that the proposed explanation of the "comic" itself explains, e.g., why some of us find Henry James's *Ambassadors* a masterpiece of the comic art? But the article at any rate deserves careful study.] **E. di Carlo.** *Tre lettere inedite del P. Luigi Taparelli D'Azeglio à V. Gioberti.* Reviews, etc.

REVUE NÉO-SCOLASTIQUE DE PHILOSOPHIE. xxiv^e Année. No. 93. February, 1922. **C. H. Grandgent.** *Dante, Scholar and Philosopher.* [A study by the Professor of Romance literature at Harvard.] **D. Lottin.** *Les éléments de la moralité des actes dans les écoles avant Saint Thomas.* [On the answers given by earlier schoolmen to the question whether the morality of an act depends solely on the agent's intention. A summary of the views of Abelard, Hugh of St. Victor, Peter Lombard, Albert the Great, Alexander of Hales.] **D. Nys.** *L'espace réel ou l'univers actuel est-il infini?* [The arguments for and against the possibility of the actual infinite are alike inconclusive. The attempts of modern times to prove either the finitude or the infinitude of the universe by appeal to physics or astronomy (Olbers, Arrhénius, Wundt and others) are equally inconclusive. The author's own view is that from consideration of what would happen if the Creator gave a body "at the boundary" of the universe an initial velocity and at the same time deprived it of gravity we are driven to accept either a "real infinite space," i.e., I suppose, an infinite plurality of "stellar systems," or the infinite void.] **R. Kremer.** *La Connaissance Historique, son objet et sa nature.* [An excellent and careful essay on the impossibility of regarding history as a science in the same sense as either the "exact" or the "positive" sciences. The root of the difficulty is that history is concerned with the concrete past, the *devenir* de l'humanité.] Reviews, etc.

JOURNAL OF PHILOSOPHY. xix. (1922), 6. **G. A. Tawney** and **E. L. Talbot.** 'Democracy and Morals.' [A defence of Dewey's social philosophy against the charge of 'radicalism' which is so deadly just now to American professors.] **J. E. Turner.** 'Dr. A. N. Whitehead's Scientific Realism.' [Does not "see anything which prevents realism from taking its place within a system of absolute idealism fuller and deeper than any yet conceived?"] **G. H. Mead.** 'A Behavioristic Account of the Significant Symbol.' ["Significance belongs to things in their relation and to individuals. It does not lie in mental processes which are enclosed within individuals."] xix., 7. **S. P. Lamprecht.** 'The Metaphysical Status of Sensations.' [Seeks salvation in "Plato's contention that in vision the eye becomes a seeing eye, and the object becomes a white object."] **J. L. Mursell.** 'Truth as Correspondence: A Redefinition.' [To "avoid the well-known dialectical difficulties of the theory of error." "Little is known as yet of the means by which the nervous system makes selections from and performs integrations upon the vast number of stimuli which come in all the time. But psychology and neurology are decidedly justified in assuming that this enormously complex mechanism performs its task somehow. . . ." Thus "every judgment is uniquely related to its object by virtue of the fact that it is a response to which the object in question has been or is the stimulus" and it is "true when it is the

response of a normal organism to a given stimulus".] **T. de Laguna.** 'The Complex Dilemma: A Rejoinder.' [To A. P. Brogan, xviii., 21.] xix., 8. **R. Demos.** 'Romanticism vs. the Worship of Facts.' [The romantic seeks to escape from the actual into the real, and "the actual world is only one of the infinite possible worlds"—in which "existence is an evil and creation the original sin".] **H. A. Wadman.** 'Relativity, Old and New.' [Criticises Turner in xix., 6.] **W. R. Wells.** 'An Historical Anticipation of John Fiske's Theory regarding the Value of Infancy.' [By 'V. F.' in *The Friend's Annual* for 1834.] **H. H. Parkhurst** reports on the 21st Annual Meeting of the American Philosophical Association. xix., 9. **G. P. Conger.** 'The Implicit Duality of Thinking.' [Deduces it from the selectiveness of perception and relation of every object to its background, and declares it "a metaphysical principle of prime importance".] **A. A. Merrill.** 'The *t* of Physics.' ["Is the fourth dimension of experience lived as real time, but treated mathematically as if it were space," as if it could = 0. But "we live in real time and not in the *t* of physics".] **W. T. Bush** reports on the Paris Philosophical Congress at Christmas, 1921.

INTERNATIONAL JOURNAL OF ETHICS. xxxii., 2. January, 1922. **Arthur Henderson.** 'The Character and Policy of the British Labour Party.' [Claims that basis of the party is intellectual, not economic, though its members are naturally largely also members of Trades Unions; states that its aim is to control government and that its policy will be directed towards greater efficiency of industry and agriculture for public service, reduction of unproductive expenditure, diminution of power of wealth in politics and remodelling of diplomatic machinery.] **Benjamin Ives Gilman.** 'What is Liberty?' [Formulates definition that liberty is acting one's part in the resultant will of all whom one's purpose concerns, develops implications that each should give the same weight to motives, adequately imagined, of others as to those he feels, and summarises that liberty is the sum of equality and fraternity.] **C. J. Cadoux.** 'The Individual Factor in Social Progress.' [A defence of the view that though society may not be ready for the universal application of a moral ideal the individual accepting it should act according to it and propagate his views; applies to problems of divorce, vegetarianism, slavery and war.] **A. B. Wolfe.** 'Emotion, Blame, and the Scientific Attitude in Relation to Radical Leadership.' [Holds that attitude based upon desire for thoroughgoing innovations is aroused chiefly by attention to desires thwarted by social maladjustments and leads naturally to resentment, anger and personal blame, that these cannot develop a policy; discusses characteristics of efficient leaders on the basis of extent to which conduct is determined by sensibility, emotion, sentiment, or impersonal rational intelligence, and suggests need for scientific research into nature of obstructions to progress.] **Benjamin Ginzburg.** 'Hypocrisy as a Pathological Symptom.' [Expands the thesis that hypocrisy is inevitable in any society in which all members do not develop morally at the same rate from the same level.] **Alfred H. Lloyd.** 'Leadership and Progress.' [Assumes that progress proceeds in periods, each a new life of the people, summarises conditions precedent to birth of such a new life and characteristics of leaders in relation to organised society, and maintains that they partake of leadership in so far as they are individuals and interpret life.] **Rupert Clendon Lodge.** 'Plato and the Moral Standard.' [Concludes examination of Platonic standards; maintains that each of proposed standards means that moral conduct is organised and directed by insight into the genuine structure of reality.]

IX.—NOTE.

IMAGINISM.

REFLEXION on Mr. Fawcett's article in the April number of *MIND*, and reconsideration of his general point of view, assisted by a good deal of correspondence with him, have convinced me that some injustice was done to his work in the review of *Divine Imagining* that I wrote more than a year ago. It is my intention to return to the subject later; but, in the meantime, a few words appear to be called for.

The chief significance of Mr. Fawcett's work may perhaps be best brought out by a reference to that of Prof. Alexander. In *Space, Time and Deity*, we find an elaborate account of almost every important feature of our universe; and an attempt is made to deduce everything—even the most fundamental categories—from the general structure of Space-Time. It is a highly speculative adventure, and can hardly be expected to carry complete conviction to every mind; but to a considerable extent it appears to be successful—certainly at least not an obvious failure. But there is one thing of which he is confessedly not able to give any satisfactory account—*viz.*, the particular *qualities* of things, the appearances of colour, sound, smell, etc. Now, I understand Mr. Fawcett's main contention to be that particular qualities can be best understood as the creations of a Divine Imagining—a view that recalls the work of the Demiurge described in Plato's *Timaeus*, though Mr. Fawcett's view differs from that in several particulars. Deity, from this point of view, instead of coming at the end of the process of Creative Evolution (as with Prof. Alexander) has to be thought of as present and active at the beginning; though this does not preclude the possibility of a development in the Divine towards a higher perfection—as suggested, for instance, in the recent Gifford Lectures by Sir Henry Jones.

If this view is adopted, it would seem that qualities, as distinguished from what Prof. Alexander describes as the 'categorical' aspects of the Cosmos, would have to be regarded as being, in a sense, *arbitrary*—as contrasted, at least, with the strict *ἀνάγκη* that is found in the categorical framework. It is in this sense that I understand Mr. Fawcett to speak of Chance; just as Hegel appeared to recognise an element of 'contingency' in the created universe. A view of this kind seems to me perfectly intelligible, though the particular expression of it may be open to question. Indeed, it seems to me the most intelligible account of the world-process that has ever, so far as I am aware, been put forward. Hence I now regard Mr. Fawcett's work as considerably more important than I at first perceived. It seems at least, if nothing else, to be the necessary supplement to such an account as that of Prof. Alexander.

It may be noted that the theory, thus interpreted, appears to involve that there is a real beginning of the time process, though not necessarily any end. There seems to be no insuperable difficulty in accepting this view, though it calls for a good deal of discussion. It does not preclude the possibility of a return of the time process upon itself, such as Mr. Fawcett appears to maintain.

I still find many things in Mr. Fawcett's book that seem highly speculative; and I am not quite clear as to his grounds for affirming some of them; but I know of no definite grounds for denying most of them. His idea of creation out of nothing seems to call for more explanation. But, so far as I understand his main positions, they seem at least plausible and enlightening. The acceptance of them would involve some modifications in opinions that I have previously ventured to suggest, but not so much change as might at first appear necessary. Of this, however, more hereafter.

J. S. MACKENZIE.

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